

NATIONAL PLANNING COMMITTEE SERIES

POPULATION

(Report of the Sub-Committee)

Chairman

DR. RADHAKAMAL MUKHERJEE

Secretary

DR. B. C. GUHA

Edited by

K. T. SHAH

Honorary Secretary

NATIONAL PLANNING COMMITTEE



VORA & CO., PUBLISHERS LTD.

3, ROUND BUILDING, KALBADEVI ROAD, BOMBAY 2.

First Edition, July, 1947

STATE OF WEST BENGAL
ACCESSION NO. *G 10 227*
DATE.....

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To
• All Those •
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•
and of
Its Various Sub-Committees
A TRIBUTE OF APPRECIATION

प्रारब्धमुत्तमजना न परित्यजन्ति

**PERSONNEL OF THE POPULATION
SUB-COMMITTEE**

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PREFACE

The National Planning Committee appointed in 1938, began its work early in 1939. After defining the nature of a National Plan, and determining the nature and scope of the work entrusted to them, the Committee issued an elaborate and comprehensive questionnaire which was subsequently supplemented by specific details. Twenty-nine Sub-Committees, formed into eight groups were set up with special terms of reference to deal with all parts and aspects of the national life and work in accordance with a predetermined Plan.

After some unavoidable delay in getting replies to the Questionnaire, the Sub-Committees began their work, and submitted Reports,—some of them Final, some Interim,—which were considered at Plenary Sessions of the parent Committee in 1940. Towards the end of that year the Chairman, Pandit Jawaharlal Nehru, was arrested and sentenced to a long term of imprisonment, during which the work of the Committee had necessarily to be suspended.

On his release a year later, hope revived for an intensive resumption of the Committee's work. But the outbreak of war with Japan, the threat to India's own safety, and hectic march of political events, rendered it impossible to devote any attention to such work at that time. It, therefore, inevitably went into cold storage once again; and remained for the duration of the war.

When at last the War seemed nearing its end, Pandit Jawaharlal Nehru with other leaders was released. The moment seemed again opportune to resume the work of

the Planning Committee. Meetings of that Body were held in September and November 1945, when certain more urgent questions, already included in the programme of National Planning were given a special precedence. A Priority Committee was appointed to report upon them. Changes and developments occurring during the War had also to be taken into account; and another Committee was appointed to review the general instructions, given six years earlier to the Sub-Committees. Revised instructions were issued to them following the Report of this Sub-Committee; and the Chairmen and Secretaries of the several Sub-Committees were once again requested to revise and bring up to date, such of the Reports as had already been submitted—either as final or interim—while those that had not submitted any reports at all were asked to do so at an early date.

As a result, many of the Sub-Committees which had not reported, or had made only an Interim Report, put in their Reports, or finalised them. The parent Committee has had no chance to review them, and pass resolutions on the same. But the documents are, by themselves, of sufficient value—prepared as they are, by experts in each case, to be included in this series.

The following Table shows the condition of the Sub-Committee's work, and the stage to which the Planning Committee had reached in connection with them.

Serial No.	Name of the Sub-Committee.	Final Report		Interim Report		No Reports
		N.P.C. Resolutions	Not consi- dered by N.P.C.	N. P. C. Resolution	Not consi- dered by the N.P.C.	
Group I.	Agriculture & other Sources of Primary Production	Handbook Pp.		Handbook Pp.		
1.	Rural Marketing and Finance	97-99				
2.	River Training and Irrigation	83-85				
3.	" "					

To sum up, fourteen Sub-Committees had made final reports, of which ten have been considered, and Resolutions taken upon them, by the National Planning Committee. Twelve more have presented Interim Reports, of which nine have been considered by the Planning Committee, with Resolutions thereon, while three Sub-Committees have not yet presented any report on the reference made to them.

The idea that all this material, gathered together with the help of some of the best brains in India in the several departments of our national life, should be printed and published was before the Committee from the start. But the interruption caused by the war prevented its realisation. It was once again mooted in 1941; but the moment was not deemed ripe then for such action, partly because the leading spirits in almost every one of the Sub-Committees were unable to devote time and labour to bring their Reports up-to-date; and partly also because war-time restrictions or shortages had made scarcer than ever before the statistics and other facts, which particular sub-committees would need, to bring their work up-to-date. The War time needs of Government had attracted several of them to work on Government Bodies, Panels, or Committees. For all these reasons it was deemed undesirable that material of this character—valuable as it must be—should be put out in an incomplete, inchoate, obsolete form, which may reflect unfavourably upon Indian capacity for such tasks.

The four last years of the War were thus a period of suspended animation for the National Planning Committee. Even after the end of the war, it has not been feasible for obvious reasons, for the Planning Committee to resume its work and finalise decisions. Continuous Sessions of that body are indispensable for considering and taking decisions on the Sub-Committee reports presented since 1940, and putting all the material into shape, ready for publication, not to mention making its own Report; but the political situation in the country made it impossible. Other conditions, however, are somewhat more favourable than in 1938-39, when the Central Government of the country were all but openly hostile to such attempts. Lest, however, the momentary difficulties make for needless further delay, it was thought advisable by the Chairman and the undersigned that no more time should be lost in putting this material before the Public. Following this advice, it is now proposed to bring out a complete Series of the National Planning Committee's Sub-Committee Reports, which will

serve as appendices to the Parent Committee's own Report. The Plan of the proposed enterprise is briefly summarised below.

Every Sub-Committee's Report, which is in a final form and on which the National Planning Committee has itself taken resolutions, will be edited and published, with an Introduction assigning their due importance to the suggestions and recommendations contained in that particular report, its proper place in the over-all National Plan; and following it up, wherever necessary, by a kind of Epilogue, summarising the developments that have taken place during the seven years, during which the work of the Planning Committee had been in suspension.

Those Reports, again, which, though in a final form, have not yet been considered, and no resolutions taken thereon, by the Planning Committee, will also be included in the Series in the form in which they were submitted, with such Introduction and Epilogue to each as may be deemed appropriate. And the same treatment will be applied to Reports which are 'Ad Interim', whether or not the parent Committee has expressed any opinion on the same. They will be finalised, wherever possible, in the office, with such aid as the Chairman or Secretary of the Sub-Committee may be good enough to render. Sub-Committees finally, which have not submitted any Report at all,—they are very few,—will also find their work similarly dealt with. The essence, in fine, of the scheme is that no avoidable delay will now be suffered to keep the National Planning Committee's work from the public.

Both the Introduction and the Epilogue will be supplied by the undersigned, who would naturally be grateful for such help as he may receive from the personnel of each Sub-Committee concerned. The purpose of these additions is, as already stated, to assign its true place to each such work in the overall Plan; and to bring up the material in each Report to date, wherever possible.

Not every Sub-Committee's Report is sufficiently large to make, more or less, a volume by itself, of uniform size, for this Series. In such cases two or more Reports will be combined, so as to maintain uniformity of size, get-up, and presentation of the material. The various Reports, it may be added, would not be taken in the order of the classification or grouping originally given by the Planning Commit-

tee; nor even of what may be called the intrinsic importance of each subject.

In view of the varying stages at which the several Reports are, for reasons of convenience, it has been thought advisable to take up for printing first those which are final, and on which the Planning Committee has pronounced some resolutions. Printing arrangements have been made with more than one Press, so that two or three Reports may be taken simultaneously and published as soon as possible so that the entire series may be completed in the course of the year.

Two other Sub-Committees not included in the list of Sub-Committees given above, were assigned special tasks of (1) preparing the basic ideas of National Planning; and (2) outlining the administrative machinery deemed appropriate for carrying out the Plan. These were unable to function for reasons already explained. The present writer has, however, in his personal capacity, and entirely on his own responsibility, published the "Principles of Planning" which attempt to outline the fundamental aims and ideals of a National Plan which remains to be considered by the Planning Committee. Similarly, he has also attempted to sketch an administrative machinery and arrangements, necessary to give effect to the Plan, when at last it is formulated, and put into execution. Notwithstanding that these two are outside the Scheme outlined in this Preface, they are mentioned to round up the general picture of the arrangements made for publication of the entire work, up-to-date of the National Planning Committee and its several Sub-Committees.

The several volumes of Sub-Committee Reports, when published, will be treated as so many appendices to the Report of the parent body, the National Planning Committee. It is impossible to say when that Committee, as a whole, will be able to hold continuous sessions, review and resolve upon Sub-Committee Reports, which have not yet been considered, and lay down their basic ideas and governing principles for an all over Plan, applicable to the country, including all the facts of its life, and all items making up the welfare of its people.

The disturbed conditions all over the country, and the Labour unrest that has followed the end of the War has caused unavoidable delays in printing and publishing the

several volumes in the series, which, it is hoped, will be excused.

In the end, a word of acknowledgment is necessary to put on record the aid received by the Editor in the preparation and publication of this Series. All those who are associated in the task,—members of the Parent Committee, or as Chairmen, Secretaries or Members of the various Sub-Committees, have laboured wholly, honorarily, and consistently striven to give the best that lay in them for the service of the country. Almost all Provincial Governments and some States,—the latter twice in some cases,—have made contributions towards the expenses of this office, which have been acknowledged and accounted for in the Handbooks of the Planning Committee, published earlier. Suitable appreciation of these will be expressed when the Parent Committee makes its own Report. At almost the end of its task, the expenditure needed to edit, compile, and otherwise prepare for the Press, the several Reports, has been financed by a Loan by Messrs. Tata Sons Ltd., which, even when repaid, will not diminish the value of the timely aid, nor the sense of gratitude felt by the undersigned.

Bombay,
1st July, 1947. }

K. T. Shah

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INTRODUCTION

Principal Demographic Problems of India

The main problems in connection with the population of India are: that notwithstanding its great size, there is a steady increase in population by the persistent excess of births over deaths, and the relative quality and quantity of its food supply. Several connected issues arising out of these main questions, will be discussed as we come across them in this Introduction.

India—Second Most Thickly Populated Country

At the present time India has the second largest population in the world, assuming that the reported figures about the population of China make that country the first in that series.

In proportion to the area of the country, and especially the area available for producing food supplies and industrial raw materials, the density of population per square mile is also amongst the highest in the world. The attached Table is significant in that regard:

TABLE I
Density of Population in Different Countries.
(Population per Sq. Mile).

Countries.	Population per sq. mile.	Year of the latest Census.
1. England and Wales	685	1931.
2. France	197	1936
3. Germany	382	1939
4. Belgium	708	1944
5. Spain	138.3	1945
6. Denmark	224	1940
7. Italy	384	1943
8. U. S. S. R.	20.8	1939
9. India	246	1941
10. China	102	1936
11. Empire of Japan	426	1935
12. Union of S. Africa	20	1936
13. Egypt	45	1943
14. Australia	2.23	1933
15. New Zealand	15	1936
16. Argentine Republic	13	1945
17. Brazil	12.6	1940
18. U. S. A.	40.8	1940
19. Canada	3	1941
20. Mexico	25	1940

The rate of decennial increment in our population, according to the latest Census report, is about 15 per cent as between 1931 and 1941. There is considerable doubt about the reliability of the figures in the last two Decennial Censuses taken in this country, namely in 1931 and 1941. The uncertainty in 1931 was due to the Campaign of Satyāgraha then in force, which had persuaded large sections of the population to boycott the Census operations altogether. There were, therefore, no returns worth the name made in many cases. It is difficult to say the extent of error introduced in 1931 by this factor. Judging, however, by comparison with previous censuses, it is permissible to believe that the margin of error cannot be very large,—perhaps not exceeding 1 per cent.

In 1941 the disturbing factors were more deep-seated and far-reaching in their consequences. The War had dislocated much of the Civil machinery, even though, on the Census day proper, it was not on our own frontiers. The fact that, 6 years after the Census was taken and 2 years after the War had ended, there is yet not published the Census Report is proof enough of the view that the 1941 Census must prove a most disappointing performance. Political pangs of a new birth for the nation—more in evidence after the War—may also be responsible for this position.

The progressively intensifying jealousies between the principal communities also contributed to inflate the figures, to the utmost extent those in charge could manage by all sorts of means. The result is that as against the previous decennial rate of increase of somewhere near 10 per cent or less, the latest rate of increase as between 1931 and 1941, is somewhere near 15 per cent all over India. If, in addition, we remember that while in 1931 Burma was a part of India; and the Census figure of the total population represented a larger area than in 1941 when Burma had ceased to be part of India, the increase in the decennium would amount very nearly to 22 per cent, a rate too high even for India not to leave grave doubts about the reliability of the compilation. The rate of increase in the several Provinces and States varies from 3 per cent in a small Province like Coorg, to 20.3 per cent in Bengal, 20.5 per cent in the Punjab, reaching as much as 22.4 per cent in the Punjab States. But unreliable as these figures may be, the margin of error caused by the factors mentioned above, cannot be over 5 per cent; nor alter the fact that the total population of India is still the second largest in the world.

At this rate of growth it is possible that the population of what we now call India at the next census will be somewhere in the neighbourhood of 45 crores, while at the moment of writing in 1947,—six years after the Census,—it may quite possibly be over 42½ crores.

Excess of Births over Deaths

The main explanation is, of course, in the excess of births over deaths. As the Table attached shows, India seems to have one of the highest birth rates in the World, though of late years it is showing a tendency to decline. The Death rate is also high; but that too shows signs of decline with the result that the excess of Births over Deaths continues, if anything, to be greater.

TABLE II
Birth Rates & Death Rates per 1,000 Inhabitants.

	1911-13		1921-25		1931-35		1941-43	
	Births	Deaths	Births	Deaths	Births	Deaths	Births	Deaths
England & Wales ...	24.1	13.9	19.9	12.2	15.0	12.0	16.3	12.1
France ...	18.1	19.0	19.3	17.2	16.5	15.7	15.9	16.4
Germany ...	...	...	22.1	13.3	15.9	11.0	16.2	12.6
Belgium ...	22.7	15.3	20.4	13.4	16.8	12.9	14.8	13.5
Holland ...	28.1	13.1	25.7	10.4	21.2	8.9	23.0	10.1
Spain ...	31.2	22.2	29.8	20.2	27.1	16.4	22.8	13.2
Norway ...	25.4	13.3	22.2	11.5	15.2	10.4	15.7	...
Sweden ...	23.6	13.9	19.1	12.1	14.1	11.6	19.3	10.1
Denmark ...	26.3	13.0	22.3	11.3	17.8	10.9	21.4	9.6
U. S. A. ...	...	...	24.6	14.2	18.4	12.2	22.6	11.7
Canada ...	...	...	27.4	11.2	21.4	9.7	24.0	10.0
Japan ...	34.1	20.2	34.6	21.8	31.6	17.9	...	...
Australia ...	28.0	10.9	23.9	9.5	16.9	9.0	20.7	10.3
Italy ...	31.7	19.3	29.8	17.4	23.8	14.1	20.5	14.2
India ...	38.6	29.9	32.7	26.0	34.4	23.5	32.0	22.0

Figures are taken from Statistical Year Book 1942-44 of the League of Nations.

This phenomenon goes on, notwithstanding frequent famines, pestilence, epidemics and wars. All these are in addition to the extreme poverty of the people, which accounts for both the high rates mentioned above. It condemns them to poor nutrition and inadequate safeguards against the rigours of nature or ravages of disease to resist which they are very poorly equipped, whether the disease be acquired, or hereditary. Every Census since that of 1871 has recorded this phenomenon.

Full allowance would indeed be necessary to make before the figures of the total population at each Census are taken as representing the real situation, in regard to such factors as:

- (a) The variations in the territorial extent for which each Census was taken,

- (b) improvement in the methods of enumeration, tabulation and collation,
- (c) immigration and emigration, internal as well as abroad.

After making all due allowance for these and similar factors, we still find that, the tendency for births to out-grow deaths is unmistakable.

Explanation of High Birth and Death Rates

Various explanations have been offered for this phenomenon of a high birth rate coupled with a high death rate. The institution of early marriage prevailing in practically the entire population and, consequently the longer span of reproductive age, provide the most important of these explanations. The reawakening of the social conscience, and the realisation of the biological disadvantage of too early a marriage and of its economic handicaps, have to some extent, mitigated the evils of this institution in recent decades; but even so, the figure remains disproportionately high and continuously to the total population regardless of hygienic, eugenic or economic considerations affecting every community in the country.

On the other hand, the prevalence of enforced widowhood customary in a very large section of the population, may be taken to be a factor against rapid and unchecked increase in numbers. This too is, in part at least, a consequence or corollary of Early Marriage. As between the two, however, the former seems to be much more predominant. The institution of polygamy is permissible to both the larger communities of this country; but it may be questioned if it is practised by any considerable proportion of our population; and so cannot be a sound explanation of high birth rate in India. In this connection, the fact is also worth notice that the proportion of women to men is remarkably smaller in this country, and has been so throughout the period the Census has been regularly taken every ten years.

At the present time, according to the Census of 1941, there are for every 201 men only 188 women in the whole country. This is in spite of the fact that taking total births, the number of female infants born is greater than that of males. This ratio continues perhaps till the tenth year. From the time that girls enter adolescence, and responsibilities of the married state, the peculiar scourge of married life upon women in India—and everywhere else, for the matter of that,—viz., frequent pregnancies and consequent

high rate of mortality amongst expectant mothers, reduces this ratio very substantially, till in the later age groups women show a steadily diminishing proportion. The all-over proportion for the whole population is consequently always smaller. Women are the largest single, but utterly inescapable minority in this country.

TABLE III

Showing the age distribution of 10,000 Males and Females of the Indian Population by ten yearly age groups.

Age-Group.	1921		1931		1941	
	Males.	Females	Males.	Females	Males.	Females
0—10	2,673	2,810	2,802	2,889	....	....
10—20	2,087	1,896	2,086	2,062	....	....
20—30	1,640	1,766	1,768	1,856	....	....
30—40	1,461	1,398	1,431	1,351	....	....
40—50	1,013	967	968	891	....	....
50—60	619	606	561	545	....	....
60—70	347	377	269	281	....	....
70 and over ..	160	180	115	125	....	....
Mean age : ..	24.8	24.7	23.2	22.8	....	....

Unproductive Age-Groups Predominate

One consequence of the high birth rate as well as high death rate is the predominance of what may be called the unproductive sections of the population, namely children and aged people. Table III gives the age groups by decades, according to the Censuses of 1921 and 1931.

From those figures we find there are more than 47 per cent of the total population under the age of 20,—more than 27 per cent of the age of 10. In the truly productive age period between 20 and 50,—a very long period for the average expectation of life in this country (about 27 years at birth), the mean age being only 23.02—there are about 41 per cent males and less than 40 per cent females, or an all over average of 41.3 per cent. Those over 50, which is for most people old age in India, number less than 8½ per cent for the males and 9.5 per cent for women. In other words, only about two-fifths of the population is adult,—really able to work productively, if the economic organisation of the country would provide them with adequate means for effective productive work.

High Mortality

As remarked above, the death rate is also proportionately very high as compared to other countries. Like

Births, this rate has also declined in recent years, owing mainly to the progress of Sanitary Science. The recurrence of famines, which curtail food supplies in the affected areas and bring about epidemics, further depletes population. Wars are a third factor working in the same direction. They have been relatively less frequent on the soil of India in the last 75 years. Our high mortality rate, however, is primarily caused by poor nutrition and consequently low resistance capacity of the mass of the people. In spite of all the factors causing high mortality, the death rate has declined in recent years. This falling rate also helps to increase the total numbers, though not necessarily the numbers in the productive age period which affects the increase in the wealth of the country.

Population and Eugenics

The qualitative aspect of the Population problem has scarcely attracted any attention in the country at all. Deliberate limitation of families, spacing of children, and attention to eugenics or race-culture are matters hardly yet in the public consciousness of this country. The National Planning Committee has passed resolutions on some of these aspects which provide but a faint glimpse of this new consciousness:—

“In the interests of social economy, family happiness, and national planning”, the Committee says “family planning and a limitation of children are essential; and the State should adopt a policy to encourage these. It is desirable to lay stress on self-control, as well as to spread knowledge of cheap and safe methods of birth control. Birth Control Clinics should be established and other necessary measures taken in this behalf and to prevent the use or advertisement of harmful methods”.

In a later Resolution the same Body records:—

“A eugenic programme should include the sterilisation of persons suffering from transmissible diseases of a serious nature, such as insanity or epilepsy”.

But these are negative, and hardly touch even the fringe of the problem. The strength of religious prejudice preventing any deliberate restriction of numbers holds a very large section of the Indian people in its grip, in all communities. The Indian people are deeply religious; and limitation of family is earnestly believed to be in contravention of Divine Commands. Mahatma Gandhi, also, has

thrown his weight in the same scale, making a formidable obstacle to the adoption of any programme of eugenics; organically devised and systematically applied throughout the country. If at all any such practice is adopted, it would be a matter of individual choice or necessity; but not part of a planned national programme of eugenics.

If we claim to be civilised enough not to be helpless victims to these scourges of nature, it would be for us to adopt measures for a voluntary, but deliberate, restriction of numbers, by such devices as have been indicated or implied in the Resolutions of the National Planning Committee quoted above. These measures will, however, not help by themselves to solve our problem of population from the qualitative side, even if it does so from the quantitative side. Man, who has come to the stage of development where he is anxious to breed carefully such species of the lower animals as dogs or horses to obtain very specific qualities in particular specimens of the species, has not yet, realised apparently the possibilities inherent in carefully scientific breeding of the human race. The subject is vested with so much taboo that the very mention of it is a matter for ridicule, if not contumely, by the easy retort that man is not a breeding bull. This is mistaking the nature of the problem altogether. It has been found by tests regarding Intelligence Quotient of recruits to the National Armies raised during the war, that the average mental age even in the most advanced countries, of soldiers coming from all social strata and reaching high educational levels, is hardly above 14 or 15. If we desire that this stage of intellectual development should be altered radically, and that man should rise to the full stature of his inherent powers of mind and body, cultivation of the race would have to be approached from an entirely different angle than from that concerning mere numbers. Modern Biology has made great advances, but even then we have not yet mastered the mysteries of heredity, and transmission of qualities. But that is no reason why more attention should not be paid to improving the calibre of the race as a whole, and not only to particular classes or strata within it. The discussion of this problem of National Eugenics may sound irrelevant in this Introduction. The measures and policies indicated above, however, would, if properly adopted and carried out, go a long way to achieve these aims and ideals within a measurable time. For the rest we must trust to better education both at home and abroad, greater co-operation between the nations of the World, and fuller

realisation of the possibilities of man on earth, if only he would abandon the greed and exclusiveness which now characterise most of our international dealings. But while we are on the eugenic aspect of the case, reference may be made once again to the Resolutions passed by the National Planning Committee on this Sub-Committee's Report about social institutions like marriage, and the restrictions or inhibitions that now hedge around it.

Need for Accurate, Up-to-date Statistics

Mention has been made already of defective or suspicious statistics in the last two Censuses. These shortcomings, such as they are, are, however, remediable. So long as communal tension has not eased, a really dependable record would be difficult to compile. One of the first tasks, however, of a settled National Government in this country would be a very close and detailed study of the national Demography. An elaborate Census Record, giving not only conventional details recorded in the past Censuses, but also on the cultural, social, material or economic side hardly ever received its due recognition in the past. There has never been a proper Census of Production even of material goods and services. Statistics in general are very defective and insufficient. There will have, therefore, to be an all-round programme of immediate improvement, in which a proper and accurate census would occupy one of the highest places.

Population and Food Supply

The problem of population has to be considered in close relation to the means of sustenance; mainly food supply, if Malthusian pessimism is not to overwhelm us. Considering the numbers, and also the available total food supply within the country, there is no doubt that the people of India suffer from a deficiency of suitable nutrition.

The mere deficiency of supply of foodstuffs within the country would not, by itself, be an adequate explanation of the continued mal-nutrition or under-nourishment of the people in our country. There are many other countries in the world producing far less of food stuffs than their population needs; but they make up their deficit in local production by imports of food material from abroad. Indian people are too poor to be able always to rely upon foreign imports of indispensable food supplies. This prime necessity of life must be found within the country.

On the other hand, the country is rich enough in the inherent properties of her soil, both chemical and physical; to offer every hope for making the supplies adequate to our needs, not only on the present attenuated scale, but also on a scale of nutrition considered reasonable and adequate for the adult working population as well as for children and aged people, by the League of Nations. Climatic considerations have been fully taken into account by the scientists who prepared the scale of diet, in terms of calories needed by human beings under different conditions of age and work.

Causes of India's Deficient Food Supply

The present deficit has been caused, as much by the increase in numbers during the period between 1931 and 1947, by the inevitable wastage of war-time indifference, as by loss of such parts of the country, as Burma, which were formerly the source of a very substantial contribution to the food supply grown within the country. War is, indeed, a passing, temporary difficulty. The real reason is the disproportion between population and food supply.

The deficit caused by the separation of Burma from India, and its temporary conquest by Japan, can only be made up, if equivalent additional land is found to grow the required extra food crops; or alternatively, the yield per unit of the principal crops in the land actually available is raised. Both these remedies are feasible simultaneously, so that there is no need to despair altogether of the food situation in this country vis-a-vis the size of our population.

The National Planning Committee has, in one of its Resolutions passed on the Population Sub-Committee's Report, recorded that a considerable amount of waste land is available in the country; and that it should be taken at once into cultivation so as to aid substantially to our available food supply,—and that, too, within a short space of time. Of the total area in the country of some 512 million acres in British India, a total of 160 million acres is not available for cultivation at all, as it is covered by forests, rivers, roads, towns etc. A total of 150 million acres, in round terms, consists of current fallows or other uncultivated land, which, though cultivable is lying waste. The net area under cultivation is thus about 213 million acres. If the total cultural waste including current fallows, were brought under the plough, the area under cultivation would be increased by more than 60 per cent; and the food supply

may also be expected to be increased, if not in the same proportion, in a very respectable proportion, say by 50 per cent of the present supply.

Improved Methods of Cultivation.

Improved methods of cultivation will also help to add to the yield per acre from land, and so increase the total available food supply. Here is a very promising means of increasing the total supply which requires to be immediately attempted. This is, perhaps, not the proper place in which to discuss this matter. It will be more fully considered in another Report dealing with Crop-Planning and Production. But even in this connection note may be taken of these figures, and the possibility indicated by them, of adding substantially to the available food supply of the country from our own resources. If only we devise better methods of cultivation, provide adequate water supply where and when needed, good manure, efficient tools and implements, the chances of doubling or even tripling the local food production are not too meagre.

Mention may also be made here of other handicaps to our agricultural production, due to the equal division of agricultural land amongst the sons or descendants of a present holder. It leads to an excessive sub-division of land, and consequent fragmentation of holdings with microscopic bits scattered all over, which makes cultivation uneconomic, poor in yield, and the yield poor in nutritive value.

Remedies

The remedies suggested above for making up the present deficiency in food supply in proportion to the population of India, within a comparatively short space of time and so providing for what we may consider to be a probable increase in the population of the country in the coming decades, concern more the physical than the social or psychological aspect of the situation. Such possibility as there is of increase in the area under cultivation by means of not only bringing cultural waste land under the plough; but also by reorganising the entire Agrarian Economy of the country so as to eliminate the present evils or handicaps of fragmentation of holdings and the scattered nature of these holdings, must be intensively and immediately developed. And these methods must be supplemented by other expedients e.g., providing better and more regular water supply by irrigation, richer

manure from organic material as well as from artificial fertilisers.

All these have already attracted the attention of those in authority; they have been adopted in recent years in varying degrees in different provinces and some States. The "Grow More Food Campaign" pays attention, as much to increasing the area under cultivation of food crops, as also to those other devices which will increase the yield per unit under cultivation.

Better procurement of foodstuffs and more even distribution of the locally available supplies, supplemented where necessary by foreign imports, have become integral and permanent ingredients of our National Policy. They were first introduced as Emergency measures during the war, but are likely to be continued, as indispensable part of the National Plan hereafter.

Storage and Conservation

Though no systematic arrangement has yet been made in that regard, the ancient practice of establishing and maintaining public granaries, or providing for adequate storage of crops so as to insure against shortage or failure in any one year, such devices will also have to be revived and employed as part of the National Plan. These stores must be used and replenished from time to time so as to prevent needless wastage through decay, and yet maintain sufficient stocks to safeguard the people against sudden emergency, or serious deficiency. The necessary facilities for transport of crops from surplus areas to those in deficit areas will be an inevitable corollary of these arrangements.

Food Crops vs. Cash Crops

It is no part of this Sub-Committee's work to consider the rival claims of food supply against industrial need of raw materials. It may be added, however, that if India desires to be industrialised to the maximum potentiality of her own resources, there is a limit, beyond which encroachment on land devoted to cultivation of industrial commercial raw materials cannot be permitted, even in the name of food needs of the people. The remedies suggested must be applied carefully and cautiously so as not to make the remedy worse than the disease. Even as regards artificial fertilisers, expert guidance will have to be taken in each case, in accordance with the character of the soil and the precise deficiency which needs to be made up by means of manuring, so that the remedy may yield the happiest results. Not all land is suitable for artificial fertilisers.

Possible Addition to Food Supply by other Food Stuffs

It was also no part of this Sub-Committee's Reference to consider in detail the alternative sources of obtaining additional food supplies from our own resources. Such addition as can be made by intensive development of river and sea fishing in our coasts, or by other forms of animal food, have been considered by special Sub-Committees whose Reports also form part of this Series. They will have to be read together to get a complete picture of our total potential food supplies in relation to our total population. The total will be materially affected if the country is partitioned into Pakistan and Hindustan, and further sub-divided within these parts. At the moment of writing, however, there is no decision taken on the subject; and so no more useful observations can be added.

Internal Redistribution and International migration

As mentioned already, these remedies are of a physical character. By themselves, however, they may not suffice to solve the problem permanently. A temporary or more expedient solution may be found in some kind of internal re-distribution of population, means of encouraging inter-unit migration for economic reasons. Such internal migrations will come inevitably in the wake of planned Industrialisation of the country. For, if industries are located scientifically, with main regard to the nearness of raw materials, markets, transport facilities, power supply and labour, the last will be more easy to take to the otherwise properly established industries than *vice versa*. And in that case the migrations of population within the country will have to be regulated and controlled in accordance with the Master Plan for the whole country as well as the Regional Plan for each unit,—if these movements of large numbers are not to create new complications, and throw the progress of planned economy out of gear.

Immigration of population on a large scale to other countries is not likely to help solve our problem, unless the world conscience is roused to a full appreciation of this problem, and International Migration is permitted, facilitated, and encouraged on a very much larger scale than has ever been the case in the past.

One of the principal articles of the Atlantic Charter specifically provides for freedom of movement for everybody all over the world. But that recognition of a theoretic right will not suffice to solve the grave problem of the extremely unequal distribution of population in the

several countries of the world, as viewed particularly, in comparison with the available food supply. It was because of this disproportion between numbers and food resources, that intense international rivalries and jealousies came into being in the last century, and led to such devastating wars involving the whole world as we have witnessed in our own generation. Unless therefore the problem is tackled by international agreements and goodwill, and implemented sincerely by all concerned, it seems impossible to trust to this method for a real solution of our particular problem.

The table given in an earlier part of this Introduction on the relative density of population per square mile in countries of America, Africa or Australia, makes a grave contrast with the corresponding density in certain countries of Asia notably India and China. There is a disproportionately heavy density in certain countries of Europe also; but their problem had been solved in a manner which is neither open nor desirable for us to rely upon. But even apart from political Imperialism and exploitive colonialism there is ample room not only for absorbing a goodly proportion of population such as ours or China's; but also for intensive development of resources now lying untouched, and so going waste. In that available space it is possible to raise the necessaries of life for much larger numbers, so as to provide for everyone a standard of living comparable to the best now existing in any part of the world, America not excluded.

The social conscience of the world, however, has not yet been roused to the degree of regarding the whole of humanity as brothers, irrespective of differences of race or creed. Countries of the world with very sparse population and very large territories are inclined to treat their soil as their exclusive possession, from which they would be entitled, morally as well as physically, to exclude all others no matter how little their own population, and how vast the resources—opportunities—offered by the territory they occupy, which remain unutilised for lack of the right type of labour to deal with them. Brazil has a population of hardly 12 per square mile; the United States of America a population of a little more than 40 per square mile; Canada and Australia of as little as 2 or 3 per square mile, Argentina and other countries in Africa a little more. On the other hand India has an average density of something over 246 per square mile. Even recognising the force of climatic factors which would not suit Indian immigrants and settlers in lands like Canada, ample room is neverthe-

less available in countries more congenial to Indian constitutions e.g., Brazil or parts of Africa and Australasia,—and other circumstances of life. But the more advanced, more industrialised, and better educated countries of the world still hold to the view that their country is their own exclusive property, where they are entitled to keep all others out, even though by so doing they run the risk of keeping a large proportion of their own resources undeveloped to their own grave injury as well as to that of the rest of the world.

Anti-Immigration Policy a menace to 'World Peace'

The Immigration Laws, therefore, which disfigure the Statute Book even in lands claiming to be liberal, like the United States of America, must be first revised by common consent. The sting of these laws is all the greater when they are directed invidiously against certain sections of the world population, on grounds of colour or race as happens to be the case even today in Africa, Australasia and even America. Unless the conscience of the whole world is roused, and a world-wide movement is adopted to re-distribute by concerted action the entire population of the Globe, with a view to adjust the man power to the material resources in every corner of the earth, the Population problem of countries like India or China would be as impossible to solve. The fate of these countries would be recurrent scourges of nature like war, pestilence, epidemics, and famine, which may deplete their numbers by brute force or at least keep them in some check.

Planned Population

The importance of deliberately controlled numbers cannot be exaggerated in a planned economy. In a proper National Budget under a comprehensive plan, the credit side would consist mainly of the man-power and material resources. That need not be expressed in terms of money; but may be equally effectively presented in the all-over national accounts of the progress of the Plan in terms of Energy Units, or some such equally effective and truly representative medium of measurement. In this view of the matter, at any given moment, there is for every country an optimum figure of population in relation to the available resources of the community, and its potentiality for further development. If the population is in excess of this optimum, unemployment and wastage, which could very well have been avoided, would be inevitable. On the

other hand, if the available population is below the required optimum, the wastage, or rather loss of potential wealth due to the lack of proper development of available resources,—would be equally significant; and would injure not only the community concerned, but, indirectly, the whole world.

All these problems of our National Reconstruction have been considered on the assumption that there would be a properly prepared Plan being carried out on a comprehensive National scale. It is significant that in the scheme of investigation of the whole problem of a National Plan the 2 sub-committees, Population and Labour, come under the same group. For this country more than anywhere else, the need for regulating and controlling population, so as to guard against any unnecessary unemployment of a considerable number in the process of carrying out the National Plan, and the consequent inevitable readjustment, such a Plan would involve transfer of population from agriculture to industry, commerce, utilities and services, is unquestionable. It would be borne with relative ease and success if there is a world co-operation on the subject.

Population and Poverty

For the rest in so far as the population of this country is also a problem of its poverty, remedies have already been suggested which, compendiously stated, consist in a wholesale *industrialisation* of this country. It was amongst the principal aims of the National Planning Committee, when that body was first established, to promote such industrialisation; and all subsequent efforts at National Planning have kept this aim in the forefront. But the National Planning Committee's conception of a National Plan was not confined to industrialisation only—and that, too, for Large Scale Industries with mechanised equipment and mass production.

The Planning Committee had envisaged an all-round economic development in all departments of the national life, put into effect simultaneously on every front. The several Reports published in this Series will give a connected and co-ordinated view and indicate the reactions of the development in each direction as regards others. In this particular case, the growth of Industrialisation would mean, not only a redistribution of population as between town and country which has been proceeding silently but

slowly in the last half century, as successive Censuses show, as in the Table annexed, also better alternative employment, so as to take off the burden on the soil of a disproportionately large population.

Distribution of Rural and Urban Population^a

	1941		1931		Percentage of total Population.					
	Places.	Population (Million)	Places	Population (Million)	1941	1931	1921	1911	1901	1891
Total Population	658,595	389.0	666,024	338.1	100	100	100	100	100	10
Rural Areas	655,802	339.3	664,444	300.7	87	89	89.8	90.6	90.1	90.5
Urban Areas	2,793	49.7	2,480	37.4	13	11	10.2	9.4	9.9	9.5

With a large variety of employment to the adult population that planned industrialisation and economic development in all fields of the national life would provide, it would necessarily bring a diminution of the pressure on the soil side by side with increasing Services, Utilities and Amenities of life. And these in their turn would necessarily mean a higher standard of living.

It is unnecessary to go further into the details of such developments. They are considered in each separate Subcommittee Report from the standpoint of its own particular reference, and will be coordinated and integrated in the Report of the National Planning Committee as a whole.

Bombay, 31st Mal, 1947.

K. T. SHAH.

P.S.—This introduction was written before the Plan of Partition, announced in the Statement of the British Government policy on June 3, 1947, which, being accepted by the principal political parties in India, becomes the foundation stone of the new State in this country, some of the remarks in the Introduction may consequently seem out of date.

Delhi, 18th July, 1947.

K. T. S.

PERSONNEL AND TERMS OF REFERENCE OF THE SUB-COMMITTEE ON POPULATION

1. Dr. Radhakamal Mukherji, (Chairman).
2. Dr. B. C. Guha, (Secretary).

Members

Prof. D. G. Karve, M.A.,	Mr. K. C. Basak
• Dr. A. C. Mukherjee	Mrs. Vjiayalakshmi Pandit
Shri B. T. Kanadive	Prof. S. R. Bose (delegate of
Sir Vepa Ramesan	the Labour Sub-Com-
Shri E. R. Sundararajan	mittee).

This Sub-Committee deals with:—

- (a) population, including the problem of numbers and quality of population,
- (b) correlation of population with means of subsistence,
- (c) remedial measures against over-population, e.g., migration within the country and emigration beyond the frontiers, including the desirability thereof,
- (d) legislation or customs regarding age of marriage,
- (e) re-distribution of population within the country and outside the country, by negotiation,
- (f) other questions affecting the numbers, quality, and distribution of population and the rate of its growth.

FINAL REPORT OF THE SUB-COMMITTEE ON
POPULATION

CONTENTS

- Chapter I The Trends of Population
- Chapter II Planned Food Policy
- Chapter III Social Reform and Legislation
- Chapter IV Unemployment and Industries
- Chapter V Social Welfare and Eugenics
- Summary of the Report.

CHAPTER I

THE TRENDS OF POPULATION

Modern demographers indicate the probable trend of population from the age composition of the population, the proportion of married women at different age periods and the gross and net reproductive rates. We shall here confine ourselves to an examination as to which factors would accelerate immediate population increase and those which would check it.

The proportions of children and old persons

Table I gives the variation in population at certain age periods in India and in her major provinces. It will be seen that in the previous census periods drought and

TABLE I

Variation in population at certain age-periods for successive censuses.

Period.	Variation per cent in population.					
	All ages :	0-10	10-15	15-40	40-60	60 & over
India.						
1881-1891 ..	+ 11.2	+ 16.1	+ 4.3	+ 10.8	+ 9.7	+ 8.0
1891-1901 ..	+ 1.8	- 5.1	+ 14.5	+ 2.3	+ 5.2	+ 0.3
1901-1911 ..	+ 6.6	+ 9.5	- 1.7	+ 7.3	+ 5.1	+ 8.6
1911-1921 ..	+ 0.9	+ 0.1	+ 8.5	- 1.0	+ 1.1	+ 3.1
1921-1931 ..	+ 10.9	+ 14.5	+ 10.6	+ 15.1	+ 3.1	- 14.9
Bihar & Orissa.						
1881-1891 ..	+ 6.4	+ 3.4	+ 18.0	+ 3.2	+ 7.0	+ 7.9
1891-1901 ..	+ 1.1	- 3.4	+ 1.4	+ 5.2	+ 0.3	- 1.9
1901-1911 ..	+ 3.5	+ 6.6	+ 0.3	+ 3.5	+ 0.7	+ 2.7
1911-1921 ..	+ 1.2	- 5.5	+ 4.9	- 0.8	+ 2.8	- 5.5
1921-1931 ..	+ 11.5	+ 14.8	+ 8.2	+ 14.6	+ 5.9	- 12.2
Bengal.						
1881-1891 ..	+ 7.5	+ 9.6	+ 11.5	+ 7.9	+ 3.2	+ 1.6
1891-1901 ..	+ 7.7	+ 6.8	+ 15.1	+ 9.4	+ 6.7	+ 1.2
1901-1911 ..	+ 8.0	+ 9.3	+ 5.8	+ 10.1	+ 3.6	+ 0.9
1911-1921 ..	+ 2.8	- 1.2	+ 8.3	+ 5.3	+ 2.5	- 5.9
1921-1931 ..	+ 7.3	+ 8.8	+ 10.7	+ 8.9	+ 3.5	- 14.6
U. Provinces.						
1881-1891 ..	+ 6.34	+ 10.18	- 0.35	+ 5.49	+ 6.11	+ 9.18
1891-1901 ..	+ 1.68	- 3.22	+ 12.21	+ 1.62	- 4.45	- 3.78
1901-1911 ..	- 1.07	- 1.28	- 4.12	+ 0.71	+ 1.74	- 3.15
1911-1921 ..	- 3.1	- 0.3	- 3.7	- 5.5	- 2.1	- 0.3
1921-1931 ..	+ 6.7	+ 12.4	+ 7.2	+ 11.2	- 3.7	- 21.7

famine were responsible for a thinning out of both old and adolescent groups.

Except in the last decade, due to absence of economic catastrophes and severe epidemics of diseases, there is a tendency of decrease of proportion of the very young, while the proportion of the very old shows, census by census, a more marked diminution, due to the selective incidence of agricultural scarcity and epidemics. The influence of droughts and famine in the earlier decades left its mark on the adolescent groups as well, until 1921, particularly in the United Provinces. Such factors as migration, inaccuracy in returns and alteration in the method of grouping are responsible for anomalies; but the dominant tendency as regards the thinning out of the young and the old is clearly discernible. Economic privations affect persons at the extremes of life more than persons in middle age, men more than women, while in the drought years, the number of births diminishes, the proportion of children to the total population being reduced. For both Bombay and the United Provinces the legacy of past famines was the dominant factor in the age constitution in the last decade, even over-shadowing the selective mortality of the influenza epidemic*. The heavy piling up of both the young and adolescent groups has been unparalleled in the 1931 census and thus will tend to a heavy and interrupted increase of population between 1931-41.

The phenomenal increase (14.5 per cent) in the 1931 census of the proportion of the smallest age group (0-10), which has been unparalleled during the last 50 years, is also responsible for ushering into social importance the problems of education and welfare of the minors on an unprecedented scale in recent years. The changing age composition in favour of the middle-aged groups, as compared with the older one, which has lost by 14.9 per cent, has also forced into prominence the question of industrial and professional unemployment.

The proportions of Married women and widows

The economic significance of the changing age distribution in favour of both minors and middle-aged persons is obvious. The pressure on the soil and unemployment of all classes have increased, and in the coming decade the present piling up of the minor and adolescent groups will

* For Bombay, see Sedgwick : Census Report of the Bombay Presidency, 1921, and Marten : Census Report of India, 1921, p. 130.

add many more million mouths to feed and employ, enormously aggravating economic pressure and rudely disturbing the land-man ratio. In the oldest group, those aged 70 and over have decreased by a million in the last decade. On the other hand, in age-groups 10-30 the increase in females has been particularly remarkable which will lead to a spurt of population growth in the present decade. This will be very clearly traced in the following tables:

Tables II and III give the proportion of women and married females at certain age periods for successive censuses in India.

TABLE II.

Variations of Proportion of Women at Certain Age-periods per 10,000 Females for successive Censuses.

			Ages.						
			15-20	20-25	25-30	30-35	35-40	40-45	45-50
1891-1901	..	..	835	892	895	851	557	652	339
1901-1911	..	..	826	930	909	835	556	631	338
1911-1921	..	..	815	881	886	833	565	621	348
1921-1931	..	..	938	985	868	756	595	505	389

TABLE III.

Variations of Proportion of Married Women at Certain Age-periods per thousand Women at the Same Ages.

			Ages.						
			15-20	20-25	25-30	30-35	35-40	40-45	45-50
1891-1901	..	..	777	876	859	793	722	584	
1901-1911	..	..	Age 15-40	833			Age 40 & over		853
1911-1921	..	..	771	877	863	797	727	599	527
1921-1931	..	..	818	886	869	824	703	627	478
England & Wales (1921)			15-20	20-25	25-35	35-45	45-55		
			18	270	621	946	721		
Japan (1925)			15-20	20-25	25-30	30-35	35-40	40-45	45-50
			132	670	876	903	889	840	780

Upto the age of 30 the age distribution of married women in India is distinctly more favourable for population growth than in both England and Wales and Japan. The period of the most effective fertility lies between 15 to 20 both in Japan and India.

For arriving at Kuczynski's fertility rates the proportion of married women, as given in Table III is significant,

and it is much more favourable for reproduction in India than in Japan.

It will be seen from the above two tables that in 1931 the proportion of women for the age-periods 15-20 and 20-25 has greatly increased and this increase is even greater when we consider the proportion of married women at the successive age-periods 15-20, 20-25, 25-30 and 30-35. Even if it be assumed that Indian women are less reproductive than those in other countries after 35, the piling up of the proportion of the married women during most part of their reproductive life in the 1931 census is most favourable for enhanced growth of population.

The earlier age-period show in all probability greater fertility rates in India than the later age-period; and since the proportion of women in the earlier age-groups is larger, this is a factor definitely more favourable to population increase than in the previous census periods.

Fertility and the Age of Marriage

The age of marriage is a matter of great demological significance. Table IV gives the main statistics regarding the distribution and progress of early marriage in India.

TABLE IV.
Number Unmarried per Thousand Females Aged . .

			5-10	10-15
1881	..	..	....	481
1891	..	..	874	491
1901	..	..	893	559
1911	..	..	891	555
1921	..	..	907	601
1931	..	..	807	619

The figures show some decrease in the numbers of those in the earlier age category who are still unmarried; but an increase of the number of unmarried girls belonging to second age category. The improvement of the age of marriage in 1931 would have been much greater had it not been for the fact a large number of child marriages preceded the Sarda Act. On the whole, we would expect in the future even greater improvement in the age of marriage. This will lead to an increase of both nuptial as well as effective fertility. As the age of marriage in India will change from, say, 10 to 13 to 15 to 20, both the rate of fertility and the rate of survival will be substantially raised. In Germany where the age of marriage of women

is seldom below 20, marriages at 20 are much more fertile than late marriage.

TABLE V

Age of Wife at Marriage	Average Number of Children.
20	2.25
25	1.69
30	1.33
35	0.78

It is unreasonable to hope that the age of marriage in the near future will reach 20 years, but that improvement of the age within the lower limits will raise fertility is shown by the experience of Baroda where Child Marriage Restraint Laws had been in operation for some time and where the change of the age of the girl at marriage from 13 to 14 upto 20 has led to an increase of both fertility and survival. In Travancore where about 49 per cent of the women are married between 15 and 20 as compared with Baroda's 13 per cent, both the number of children and the proportion of those who survive diminish, as the age of marriage of girls advances. This is, however, contrary to general experience. In India on the whole the improvement of the age of marriage of wife upto, say 20 years will, it is expected, increase the effective fertility. Baroda, Travancore and Scotland are compared in the table below:

TABLE VI.

Age of Marriage of Wife	Average number of children born per family			Average number of children surviving	
	Travan.	Baroda	Scotland		
13-15 ..	7.0	5.24	.....	5.4	3.08
15-20 ..	6.5	5.54	9.02	4.9	3.30
20-25 ..	5.9	5.40	7.86	4.4	3.29
25-30 ..	5.0	4.97	5.66	3.7	3.11
30 and over	3.6	3.72	3.89	2.9	2.23

Widowhood withdraws a large section of the Indian women from child-bearing. 16 per cent of the women of the reproductive age in India are widows and do not bear children. In England and Wales only 8 per cent of the females are widows, and some of these do remarry. But the general ratio of widowed females is decreasing. In 1921 there were 175 widows in every 1,000 women, a figure which had fallen in 1931 to 155.

TABLE VII.

Proportion of widows in the successive censuses. Variations of Proportion of widows aged 15-40 per thousand.

	1901	1911	1921	1931
India	137	124	138	112
Bengal	240	224	232	155
Bihar & Orissa	120	125	138	116
Bombay	148	117	136	103
Burma	56	43	49	297
C. P. & Berar	125	78	104	161
Madras	131	120	131	102
Punjab	88	106	98	67
United Provinces	102	104	111	94
Rajputana (Agency)	152	108	141	103

It appears that on the whole the proportion of widows is diminishing along with the prejudice against the practice of widow re-marriage. The diminution is the largest in Bengal because of the dominance of the Muhammadan population amongst whom widows often re-marry. It is, however, not easy to indicate the social trend definitely since it is obscured by the factor of differential mortality among males and females.

TABLE VIII.

Proportion of widows and unmarried women in India in certain age-periods.

1931.				
Age	Total Number of females	Unmarried women.	Widows	Percentage of unmarried women and widows to the total number of women.
15-20	15,897,514	2,360,984	532,762	18.2
20-25	16,696,096	1,029,773	876,635	11.4
25-30	14,724,565	354,878	1,580,200	13.1
30-35	12,810,486	248,934	1,999,583	17.5
35-40	10,084,888	145,708	2,848,043	29.6

Mortality and Longevity of Women

Female mortality experience, as recorded in Table IX during the last two decades, also indicates that the specific female death-rate, which is generally higher than amongst males in the 5-10 age-group, and again between 15-40 in

some provinces, is steadily diminishing, showing less neglect of female children and also improved midwifery so far as the whole of India is concerned.

TABLE IX.

Death-rate of females at certain age-periods between 1921-32

	1921	1922	1923	1924	1925	1926
5-10	13.81	9.62	10.29	12.13	9.56	10.16
10-15	10.34	8.61	8.83	10.98	8.28	8.97
15-20	15.36	12.23	12.91	15.58	12.88	14.05
20-30	17.15	13.20	13.52	15.68	13.25	14.24
30-40	19.02	14.56	14.51	16.89	14.09	15.03

	1927	1928	1929	1930	1931	1932
5-10	9.35	9.56	9.56	9.96	10.5	8.9
10-15	7.90	8.20	7.75	7.54	6.6	5.5
15-20	13.19	13.74	13.16	13.13	Not	Not
20-30	13.88	14.56	14.03	14.05	Avail-	avail-
30-40	14.47	15.00	14.67	14.79	able	able

The same is indicated by the steady rise in the average expectation of female lives in India.

TABLE X.

1881	1901	1901	1911	1931
25.58	25.54	23.96	23.31	25.66

A similar rise is true of the average number of years lived through the reproductive period (15-50), as calculated by Raja:

1901	1911	1931
12.26	12.05	13.91

As regards survival, the 1931 life-table gives to each female child about 1.86 years more than in 1911 and 1.65 years more than in 1901. This fact gives a further indication, favouring an expectation of increased reproduction.

Fertility Rates in India and Japan

General mortality experience (of both males and females) has shown that there is a distinct tendency for a fall, suggesting also the probability of some further diminution of the death-rate in the future.

TABLE XI.

I N D I A

Period.	Birth-rate per thousand.	Death-rate per thousand.
1901-1910	38	34
1911-1920	37	34
1921-1930	35	26
1931-1935	34.7	23

J A P A N

Period	Birth-rate per thousand.	Death-rate per thousand.
1901-1910	32.25	20.0
1911-1920	33.25	21.7
1921-1930	34.1	20.6
1931-1935	31.7	17.2

The birth-rates in India and Japan are almost on a par though in the former country its diminution has been larger. We do not know anything about the fertility rate in India. In Japan the fertility rate is highest at the age of 19 and 20, when the peak of 545 is reached. After 20 the fertility rate declines rather rapidly, the figure being 119 at the age of 40. Fertility rates would differ in different countries and even in the same country between different communities and social groups, due to racial, regional and other factors. If we assume that in India and Japan the trend of fertility rates, through the reproductive period, 15 to 40, is the same, the uninterrupted increase of the proportion of married women in the age-periods 15 to 20 in India from 1891 to 1931 indicates heavier specific fertility and a faster increase of population than in Japan, where the proportion of married women between 15 and 20 is only 132 as compared with India's 818. Another significant trend is represented by the improvement of the age of marriage in India. In the coming decades more girls will be married between 17 to 20 in India than between 12 to 14 and the former years show the highest fertility rates in the case of Japan. In Japan the delay of 1 year in marriage at the age of 21 shows the largest decline in fertility, there being no decline in the fertility rate for postponement at 19. In India, for several generations, the marriage age cannot advance beyond 20. Thus, on the whole, the specific fertility rate and the gross reproduction rate are much higher in India than in Japan. Accepting the gross reproduction rate in Japan 2.39, we may assume that 100 Indian women give birth to 239 female children. This figure would be somewhat larger than what may be deduced from the inadequate fertility enquiry during the last

Indian census operation. According to this every average married woman in India has 4 children born alive and 2.9 children survive. The proportion of male to female births in India is 108 : 100 as compared with Japan's 101 : 100. Thus every married woman would, on this basis, contribute only about 1.9 female children. This appears to be an under estimate. In 1925 when Japan showed a gross reproduction rate of 2.39 her birth rate was 34.9, which exactly corresponds to India's birth-rate in 1931 (35 per thousand population). The expectancy of female lives in India and Japan may be thus compared:

TABLE XII

	At Birth	At 20	At 40	At 60
INDIA				
(1931)	25.56	27.08	18.23	10.81
JAPAN				
(1925)	43.20	40.38	28.09	14.12

With the birth-rate almost the same and female expectancy about two-thirds of Japan the specific fertility in India must be much larger than in the case of the latter country. The age distribution of Indian women shows much larger proportion between 15 and 25 (Table III) and this is also favourable for a higher specific fertility.

Calculation of the Net Reproduction Rate for India

Kuczynski calculates "the gross reproduction rate" by the formula—

$$\frac{\text{Total fertility rate} \times \text{Female Births}}{\text{Total Number of Births}}$$

and by adjusting the latter to the mortality figures reaches "the net reproduction rate". His method has been followed in constructing the fertility table for India, the specific fertility of women in Japan being adopted for our country due to the present incomplete state of fertility data here. Applying the Japanese fertility rates to India age by age we obtain column 3. The figures in column 4 give the number of females living between 15 and 16 etc., according to the life-table for Indian females worked out by the actuary for the Indian Census Report, 1931, page 174. Column 5 has been obtained by deducting the unmarried females and widows age by age according to the following percentages; between 15 and 20, 18.2 per cent; between 21 and 25, 11.4 per cent; between 26 and 30, 13 per cent; between 31 and 35, 17.5 per cent; between 36 and 40, 29.6 per

cent; between 41 and 45, 37.4 per cent; and between 46 and 49, 52.5 per cent. A clearer but less accurate designation of column 4 would be "Survivors per 1,000 females born between ages X and X+1" and of column 5 would be "Female births of survivors of 1,000 new born girls".

TABLE XIII.
Fertility Table in India.

(1) Years of Age.	(2) Total Births per 1000 married women in Japan	(3) Female Births per 1,000 married women in India	(4) Females in stationary population in India	(5) Married women in stationary population in India.	(6) Female births in stationary population per 1000 married women in India.
15	463	222	564	461	102
16	492	236	577	456	108
17	547	261	550	450	117
18	507	243	541	443	108
19	545	262	533	436	114
20	545	262	524	429	112
21	515	248	514	455	113
22	463	223	504	447	160
23	434	209	494	438	92
24	395	190	484	429	81
25	372	179	474	420	75
26	364	175	464	404	71
27	343	165	453	394	64
28	331	159	443	385	61
29	320	154	432	376	58
30	304	146	421	366	53
31	289	139	411	339	47
32	284	137	400	330	45
33	260	125	389	321	40
34	263	126	378	312	39
35	251	121	367	303	37
36	229	110	356	251	28
37	211	101	345	243	25
38	195	94	334	235	22
39	149	72	323	227	16
40	119	57	312	220	13
41	93	45	301	188	8
42	66	32	290	182	6
43	42	20	280	175	3
44	26	13	269	168	2
45	13	6	259	162	1
46	10	5	249	118	.6
47	7	3	239	113	.3
48	4	2	229	109	.2
49	1.6	.8	219	104	.08
Total ..		4,542.8	..	..	1,762.18

The gross reproduction rate of Indian mothers amounts to 4.5, which may be compared with Ukraine rate of 3.65 of all females in 1896-97. But the latter dropped to 2.49 in 1926-27. The total number of girls born to 1,000 women in India passing through child-bearing age would be 4,542, but since according to the life-table out of 1,000 life-born females only 524 females (and hence 524—18.2 per cent or 429 married women) are found to be living at the age of, say, 20 and so on, total fertility (measured by female births) is reduced by mortality from 4,542.8 to 1,762.18. A thousand mothers would be replaced by 1,762 new-born girls. Of these 308 would be widows and unmarried females (17.5 per cent). Thus a thousand mothers would give birth to 1,454 future mothers and the net reproduction rate for India will be 1.762—308 or 1.454.

TABLE XIV

The net reproduction rates of several countries are given below :

Country.	Year.	Net Reproduction rate.
Russia	1928	1.70
Japan	1925	1.495
India	1931	1.454
Ukraine	1929	1.40
Italy	1921-22	1.40
England & Wales	1921	1.087
France	1933	0.82
Germany	1933	0.70

If we take a generation as a period of thirty years, population in India would be increasing in the proportion 0.454 every 30 years. Thus by 1961 the population of 353 millions would increase to 513 millions, if fertility and mortality remain constant.

Regarding the use of the net reproduction rate for forecasting the future population Dr. Enid Charles observes, "The important point to note is that the net reproduction rate represents to a high degree of approximation a rate of growth to which the present population is tending. The length of time before a population begins to behave in the way indicated by the net reproduction rate depends on the extent to which its age composition differs from that of a stable population compatible with the net reproduction rate." With these limitations, however, the forecast of the future population based on analysis of the quantitative aspects of the population structure foreshadows a

grave economic crisis, which is primarily and fundamentally the problem of food planning for the additional 160 millions or so, who, unless fertility changes or some famines or epidemics ravage the land, are sure to come.

Characteristics of the Indian Population Pyramid

The movement of population in India, however, is the result of factors which differ essentially from those in Western countries. But fertility and mortality in India respond to conditions of agriculture as well as public health in a manner unknown in the West. In the Western countries the age composition is relatively stable and dominated by the net reproduction rate, mortality being a negligible factor. In India, on the other hand, reproduction is to all intents and purposes unchecked by human volition and the condition of harvests leads accordingly to sharp variations of the proportion of the minor age-groups. On the other hand, drought or famine as well as epidemic diseases cause considerable fluctuations in both the minor and adult age categories. The much lower expectation of life in India also sharpens the fluctuation in the adult age-groups. This may be illustrated by comparison between a typical Indian province and other countries with reference to the age distribution.

TABLE XV
Types of Population: Distribution of Population by 10-year Age-groups.

Age Group				Bihar and Orissa	Japan	Italy	Ger- many.	Eng- land & Wale	U.S.A.	France
0-10	..	..	..	286	254	110	158	181	217	180
10-20	..	..	..	200	212	209	205	190	190	177
20-30	..	..	..	176	158	161	184	161	174	150
30-40	..	..	..	144	120	129	142	146	150	143
40-50	..	..	..	97	105	106	128	132	115	138
50-60	..	..	..	57	74	87	96	96	79	114
60 and over	..	..	..	46	77	109	92	94	75	140

The outstanding fact in the type of Indian population is that there is a heavier piling up of the base and violent fluctuations are relatively common. Like India, Japan has also a heavier foundation than all the Western countries. Both in India and Japan there is shrinkage in the middle and old age-group and the shrinkage is larger in India than in Japan. In the Western countries there is a gradual slope, England, Germany and United States showing the slope best. Mature adults are proportionately very much less

in India than in Japan and all Western countries. In Bengal the proportion in the old age-group is the least, considerably smaller than in Bihar and Orissa and other Provinces. This is probably due to earlier maturity and senility and the endemic of malaria in Bengal. It is likely that in India the population reaches maturity earlier, especially in the hot and moist regions, and the prevalence of infant marriage also accounts for this peculiarity in age composition. The same differences in the types of population may be exemplified by applying Sundbarg's age-categories.

TABLE XVI.
Distribution of Three Functional Age Groups :

INDIA			
	Under 15	15-50	50 and over
1911	388	503	109
1921	392	495	113
1931	399	505	96

BIHAR AND ORISSA			
	Under 15	15-50	50 and over.
1911	402	488	110
1921	397	496	107
1931	402	502	96

J A P A N			
	Under 15	15-50	50 and over.
1910	349	486	165
1920	365	480	155
1930	366	482	153

Table XVII presents a fair view of trend in the age-distribution of the Indian population.

TABLE XVII.
Distribution of Population by 10-year Age Periods 1891-1931
(Per 1000 population.)

Age Period	1891		1901		1911		1921		1931	
	M.	F.	M.	F.	M	F.	M	F	M	F
0-10	283.7	292.3	264.8	272.1	271.0	281.6	267.3	281.0	280.2	288.9
10-20	197.8	175.8	213.0	191.7	201.8	182.5	208.7	189.8	208.6	206.2
20-30	167.8	180.1	166.6	178.7	171.8	189.9	184.0	176.6	176.3	185.6
30-40	145.5	140.1	145.7	140.8	145.1	139.1	146.1	139.8	143.1	135.1
40-50	100.4	94.9	101.9	99.1	101.4	98.9	101.8	96.7	96.8	89.1
50-60	59.0	59.6	61.4	62.1	60.9	60.7	61.9	60.6	56.1	54.5
60-70	...	...	...	...	34.0	38.0	34.7	37.7	26.9	28.1
70 & over	46.2	57.3	46.6	55.5	14.5	17.5	16.0	18.0	11.5	12.5

We find that during the last four decades there is a steady decrease of the old age classes 50 and over. The minor age-group has not much increased but has shown fluctuations from decade to decade due to disease and economic conditions. Its remarkable proportionate increase since 1921 is discernible. Between 1921 and 1931 there has been a tremendous increase in small children as shown below:

TABLE XVIII.

In Million		
Age	1921	1931
0-5	3.96	5.34
5-10	4.67	4.55

The reduction of the old age class in ratio from 105.2 to 94.5 between 1891-1931 is an index of the decrease of survival value of the population. Though population is on the whole progressive there is a gradual thinning out of the old. Even the upper middle-aged group (40-50) has declined in ratio from 100.4 in 1891 to 96.8 in 1931. This group everywhere shows the lowest mortality and the best leadership. The decline in proportion of this group which is already the lowest among all the countries tabulated above does not augur well for social progress in the immediate future.

Causes of fluctuation of the Age and Sex composition

A variety of factors operates to cause marked fluctuations in both age and sex composition of the population in India: (1) the variation of birth-rates which increases with good harvests and diminishes with bad harvests; (2) the variation of mortality which increases with bad harvests and diminishes with good harvests; (3) the selective incidence of certain diseases which have unfavourable effects on reproduction or which carry off a larger proportion of females or the very young or the very old. In Bengal the conception rate shows heavy increase in March and June and decreases in October or November when malaria breaks out after the monsoon. Influenza levies a heavier toll from among infants and younger adults, i.e., persons between 20 and 35. Children and adolescents suffer less and old people particularly males do not seem to be so seriously affected. Influenza also strikingly reduces the conception rate. Malaria is particularly unfavourable to younger

adults especially women. Similarly the incidence of mortality from plague is heavier among women. The diseases which affect women more than children and men also affect the conception rate. (4) Migration is spasmodic in India, the volume being governed by the intensity of agricultural distress. In a year of scarcity there is an exodus of able-bodied men to places outside the district or province and this indirectly brings about a diminution of birth-rate in a scarcity year.

All the above factors, which lead to the violent fluctuations of birth-rate and mortality bring about oscillations in the age composition and the proportion of female reproductive group in the population. This would make the net reproduction rate in India an unreliable index of population growth. We have already referred to the heavier increase of population of the minor and adolescent age groups during 1921 and 1931 and especially of women at ages 15-20 and 20-25. The increase in the minor age-group is itself the result of a relative agricultural prosperity in India in the years previous to the agricultural depression when the prices of cereals remained at a relatively higher level for some years after all other commodities had come down in value. The increase in children under five years is specially remarkable. On the other hand while the increase in females in age-groups 10-30 is responsible for the recent storm of breeding in the country, the low numbers in the 1931 census in group 5-10, which presumably are the result of the after-effects of the influenza epidemic of 1918 will probably reduce the birth-rate in the first half of the decade 1941-51. It is thus that specific fertility or net reproduction rates cannot truly measure the population trend in India as in the Western countries.

Nutrition and Vital Statistics

There is an intimate connection between agriculture, nutrition and fertility, which is discernible not by an all-India survey, but only by agricultural and demographic investigations in particular agricultural regions or ecological areas. Such investigations indicate that fecundity is reduced as the result of the deterioration of the food position in the face of an intense population pressure. The relation between sterility and malnutrition has been traced in many countries. In feeding animals on diets extremely deficient in Vitamin B, McCarrison noticed in 1918 that atrophy of the testis was one of the earliest effects. During famines and wars, sterility in women and failure of the menstrual

functions have been recorded as evidences of malnutrition. Malnutrition by leading to specific deficiency in essential foodstuffs, such as calcium and vitamins, has direct effects in the reduction of fecundity, as laboratory experiments indicate. No doubt, the consumption of wheat which contains vitamin B, is considerably reduced, if not altogether ceases, during a year of scarcity or famine, while milk and milk-products, as well as some fresh vegetables, all of which are rich in vitamin E, that has also been considered to have favourable effects on reproduction, are entirely eliminated from the diet. The general laws of physiological vigour indirectly affects menstruation which leads to an increase of abortion and contributes to diminish fecundity. On the other hand, scarcity or malnutrition increases the death-rate, especially of children and mothers. There are several diseases like diarrhoea, dysentery, beri-beri, 'malnutritional oedemas, epidemic dropsy and xerophthalmia,' which are found especially in India and China and caused by inadequate or faulty diets.

In the heavily populated provinces: United Provinces, Bihar and Orissa and Bengal there has been a steady decline of birth-rate during the last thirty years, which the census superintendents or the Public Health Directors find difficult to account for, apart from the inaccuracy of statistics. The figures are given as below:

TABLE XIX.

Fall of Birth-rate in the United Provinces, Bihar and Bengal.

Year.	United Provinces.	Bihar & Orissa.	Bengal
1901-1910	41.4	41.0	35.5
1911-1920	42.3	39.0	32.5
1921-1930	35.1	36.5	28.5
1929-1935	35	33	29.6

Intensive study of vital statistics over a period of sixty years in certain congested districts in the United Provinces also indicates that there is a distinct tendency towards diminution of birth-rate after a district's saturation density is over-stepped. For instance in Jaunpur the average birth-rate was 36 per thousand between 1901 and 1911; it came down to 28 between 1919 and 1927. In 1932 it stood at 26.4. Between 1928 and 1932 the birth-rates remained stationary at 28. Such diminution of birth-rate is not due to human volition at all. Nor is it due to postponement of

marriage. The practices of infanticide and abstention from intercourse have also largely been given up. The slackening of birth-rate is due to the direct and indirect effects of mal-nutrition, and the alteration of the age and sex composition of population.

Cause of reduction of Fertility

Fertility, therefore, is reduced in the following manner:

(1) Inadequate and ill-balanced dietary by leading to a chronic deprivation of certain essential minerals and vitamins causes a decline of fertility. (2) Malnutrition raises infant mortality thus reducing the birth-rate through the diminution in the proportion of adults in the total population. (3) Malnutrition is also unfavourable for the mothers and by raising maternal mortality reduces the birth-rate. (4) Epidemics which may affect persons of child-bearing age reduce the fertility. (5) An increase of the disproportion of sexes, i.e., paucity of females also indirectly reduces fertility. The sex proportions at birth vary widely in different countries. In India during the last few decades the proportion of females per thousand males is gradually diminishing in some provinces.

TABLE XX.

Average Number of Female Births per Thousand Male Births.

	1891-1901	1901-1911	1911-1921	1924-1928	1929-1933
Bengal	936	941	933	926	926
Bihar & Orissa* ..	942	955	950	960	960
Bombay	926	926	925	926	926
Burma	931	938	945	950	950
Central Province ..	941	954	955	950	950
Madras	959	958	956	960	950
N. W. F. Province ..	816	819	805	770	770
Punjab	906	909	906	890	890
United Provinces ..	918	924	919	890	890
Japan (1930) ..					990
U. S. A. (1930) ..					976
England & Wales (1931)					1087
Scotland					1082

* The female ratio is higher among the aboriginal tribes and castes in Chota Nagpur and Orissa, and this explains largely the excess in Bihar and Orissa. The figures of Bihar proper are as follows :

	1901-11	1911-21	1921-31
North Bihar	952	944	950
South Bihar	954	951	955

Decline of the Sex Ratio

Race, environment and dietary govern the sex-ratio at birth. It appears, on the whole, that there is a lower proportion of females born in North and North-Western India, where the Aryan and Semitic peoples preponderate than in the South and Central tracts of India, where the Dravidian race element is the strongest. But race is only one factor in the distribution of the sex ratios. The same castes which are distributed in different parts of Northern India show a deficiency of females as one moves further towards the arid conditions in the West and North-West. In Sind, Gujarat, Rajputana and the Deccan, where conditions of economic life are more severe, there is a striking deficiency of female births. Harder economic life led formerly to infanticide or deliberate neglect of girl babies, and this may have selected those females for survival who are likely to bear a preponderance of male children. It is not unlikely that severe economic struggle under hot and dry conditions, which is aggravated by the increase of population is responsible for the downward trend of female births in the N.W.F. Province, Punjab, Bombay, Bengal and the United Provinces. Castes, which promote inbreeding, may also have increased masculinity and perpetuate it so long as strict endogamy is maintained.

Economic struggle and inbreeding seem, both, to lower the vitality of women and thus promote paucity of female births. The sex proportion in the reproductive ages depends upon differential birth and death rates which are in some measure governed by the age of marriage, risks of child bearing, differential treatment of boy and girl babies and the nature and extent of woman's work in the field. Chemical and food materials have an enormous influence in the sex ratio and fertility of animals. As economic pressure increases, it is not improbable that the deficiency of females, which is the greatest in the Indo-Gangetic plains, will increase and this, coupled with other factors, may alter the age and sex composition of the population in the long run to the detriment of birth-rate.

Where man's institutions and social habits and his standards of living do not safeguard his equilibrium density, his ecological routine of life and his stable occupational adjustment in the region, ecological controls of population,

which are operative in the regulation of animal numbers, come to play an increasing role in re-establishing the equilibrium. In the overcrowded regions of India we now meet with the familiar checks of animal numbers. (1) The rodent type of check or an increase of mortality, especially in the form of epidemic outbursts following storms of breeding. (2) The fruit-fly type of check or a gradual slackening of birth-rate with density as an average abundance is overstepped. The greater the approximation of numbers to an equilibrium density through the ecological controls of fertility and mortality and the diminution of the average expectation of life, the more remote will be the indiscriminate reduction of population by actual starvation. But the Malthusian night-mare of famine as the ultimate safeguard of an equilibrium density still haunts the population. Meanwhile the paucity of females increases with over-population and becomes established as a stable racial trait, which is transmitted to the next generation. Where man does not exercise any control over his multiplication, the forces of evolution and heredity combine to check over-population and seek to preserve the organic acquisitions of the past. But such check is both cruel and haphazard. Man's conquest of the soil is in vain if he fails to exercise his own volition or the socio-religious restraints of the past or uses scientific technique for the control of his reproduction, but leaves nature to control it, indirectly, through its control over the rate of mortality and even over his capacity of reproduction.

CHAPTER II

PLANNED FOOD POLICY

At the beginning of the 17th century India's population stood at about 100 millions. By the middle of the 18th century, population increased to 130 millions, and by the middle of the 19th century it increased to 150 millions. Since that period population increased at an even greater rate. By 1931 population stood at 353 millions and in 1941 statistical analysis indicates that it will reach over 400 millions.

The Extension of Cultivation

This unprecedented increase of population had been chiefly due to the regime of peace, control of famines and epidemics and improvement of agricultural methods. With this increase of population there had been a steady extension of cultivation. But now the chances of expansion of cultivation have been exhausted, at least in the major provinces, hills, sand-dunes and uncultivable wastes, now thwarting extension.

	Percentage of Net Cultivable Area.	Percentage of Cropped Area to Cultivable Waste.	Percentage of Net Cropped Area to Current Fallow.
Bombay	65	4	27
Bengal	67	22	22
Bihar and Orissa ..	64.9	26	21
Agra and Oudh ..	71.7	28	10
Madras	60.4	34	27
Punjab	66	66	17
Assam	22	248	45
Sind .. ..	....	158	142

The area of forests cannot be given over to the plough in the major Provinces; it is already too small in relation to the cultivated area. A further diminution will affect, unfavourably, the quantity and distribution of rainfall, cause floods and endanger agriculture.

	Area in Square Miles.	Crop Area in Million Acres.	Area of Reser- ved Forests & Lands in Square Miles.	Percentage of Column 3 to Column 2.
Bengal	76,755	23	10,529	21.0
Bihar & Orissa ..	82,936	24	2,780	7.4
United Provinces ..	106,720	36	5,228	9.3
Madras	143,290	34	19,340	36.4
Punjab	97,281	26	6,695	16.4
Central Provinces ..	99,927	24.5	19,677	51.4
Bombay	123,125	33.0	12,292	23.7

Reclamation of Waste Lands through Rural Settlement Departments:

But in Burma, Assam, the Punjab, Central Provinces and Madras, extension of cultivation is possible. India's total waste lands, which are available for cultivation, but not taken up and abandoned, in the different provinces, States and Agencies, excluding the current fallow, which is necessary to maintain soil fertility in her present stage of farming, amount roughly to 162 millions of acres. Of waste lands in British India about 40 per cent are in Burma, 12 per cent in Assam and 9 per cent each in the Punjab, the Central Provinces and Madras. Of the total 162 million acres about three-fourths, or 122 millions may ultimately be sown with food grains under an unremitting population pressure. This might give about 29 million tons of food grains.

It is essential that measures of land reclamation, agricultural engineering and irrigation should be undertaken, on a large scale, in these provinces with the assistance of the Central Government and planned migration from the more densely populated areas should be directed for agricultural colonisation. The rapid colonisation of the Brahmaputra Valley in Assam, characteristic of the last three decades, is an instance of mass migration on a scale which has few parallels in the world. The migration began sometime before 1911, the Bengalee immigrants being censused for the first time on the char lands of Goalpara in that year. By 1921, the first band of immigrants completed the colonisation of Goalpara. In the years 1921-31, the immigrants consolidated their position in that district and also completed the conquest of Nowgong. The Barpeta subdivision of Kamrup has also attracted immigrant settlers, as also Darnang. In the future more and more of this mass

movement of trekkers will be directed towards the empty spaces of Kamrup and North Lakhimpur; in the latter area several thousands of Mymensinghians already have formed an outpost.

We read in the recent census report: "The immigrant settlers have opened up vast tracts of dense jungle along the south bank of Brahmaputra and have occupied nearly all the lands which are open for settlement in this tract. They have brought in their wake wealth, industry and general prosperity to the whole district. They have improved the health of the countryside by clearing the jungles and converting the wilderness into prosperous villages. Their industry as agriculturists has become almost proverbial and they extract from their field the utmost they can yield. Their love and care of cattle is also an object lesson to others. Government revenue has increased. Trade and commerce have prospered. The local Assamese at first did not like the advent of these people in their midst but gradually they came to see their better side—their industry, their knowledge of agriculture, their contribution to the general prosperity of the district—their prejudices and dislikes are beginning to disappear."

In the decade, in 1901-1911, the gain to Assam by migration was 77,799 and in 1911-1921 it increased to 411,941 but in 1921-31 it was reduced to 1,21,648. The number of Eastern Bengal settlers including the children born in Assam, who are at present living in the Assam Valley, has been estimated as over 500,000. It is, however, only Assam that shows a considerable trend of emigration, Burma coming in as a far second. This will be evident from the following table:

				Gain or loss per mile of population.		
1. Provinces which send out emigrants				1911	1921	1931
Bihar and Orissa	..	..	..	- 37	- 40	- 37
United Provinces	..	..	..	- 15	- 20	- 21
Madras	..	..	..	- 30	- 35	- 20
2. Provinces which receive emigrants.						
Assam	..	..	..	+114	+152	+144
Burma	..	..	..	+ 48	+ 52	+ 40
Bombay	..	..	..	+ 14	+ 18	+ 19
Bengal	..	..	..	+ 30	+ 26	+ 12
N. W. F. Province	..	..	..	+ 31	+ 39	+ 6
Central Provinces	..	..	..	+ 27	+ 18	+ 4

The following table would show the net gain or loss in the volume of migration in the major provinces:

Provinces which receive immigrants—figures (000)

	1901	1911	1921	1931
Assam	699	757	1,140	1,241
Burma .. .. .	....	....	553	593
Bengal .. .. .	....	286	1,132	771
Bombay	148	351	472	597
Central Provinces	323	428	197	227
Punjab	185	117	69	67

Provinces which send out emigrants—figures (000)

	1901	1911	1921	1931
Madras	467	585	718	888
United Provinces	895	818	974	1,063
Bihar and Orissa .. .. .	....	....	1,567	1,291

The provinces which may have a new lease of agricultural prosperity are arranged in a descending order as follows:

Province	Population for 100 acres of cropped area.	Percentage of sown to total area.
	(1935)	(1935)
N. W. F. Province	61	27
Central Provinces	63	39
Burma	81	12
Assam	135	18

Burma, with her separation from India and strong development of anti-Indian feeling among her rural masses, has ceased to be a suitable field for Indian colonisation and settlement, though her empty spaces cry for the hoe and the plough. The N.W.F. Province is rather infertile, its dry and desert regions checking agricultural extension. Yet the success obtained in large scale dry farming in Utah in the U.S.A. in conserving soil moisture by the systematic cultivation of alternate crops of wheat and lucerne in arid areas, with an annual rainfall not exceeding 6 inches, and in de-alminizing salt-poisoned land shows that many semi-arid zones in the North-West could bear ample cropping. On the other hand Central Provinces and Burma, and to a smaller extent Assam are still waiting for the axe and the plough. All these provinces should have a Land Reclamation and Rural Settlement Department as in Italy and the U.S.A. for inviting and co-ordinating migration with a view to agricultural colonization and progress.

Provincial autonomy has sometimes engendered strong provincial feelings which stand in the way of smooth and peaceful colonisation and settlement. Nor is a laissez faire policy with reference to the mass movement of people desirable. Colonisation should be directed and regularised for minimising social friction. The fixation of boundary lines or routes of settlement with a view to restrain immigrants from occupying lands near villages, settled by the aboriginal tribes and indigenous castes, as adopted in Assam, would contribute towards the progress of agricultural settlement without the attendant risks of friction with the indigenous population.

Years will have to pass before the waste lands, some of which are now barren and uncultivable, could be brought under the plough to successful agricultural engineering: agricultural practice also demands recurrent periods of rest for the land which grows an arranged succession of crops as long as agricultural practice is not transferred. The area reckoned as current fallow and cultivable waste cannot be diminished, without the risk of soil depletion.

The Deterioration of the Food Position:

Meanwhile, the rate of increase of total food production is being outrun by the rate of population increase. This will be evident from the second table on page 45:

Since 1930-31 the margin in the case of aggregate food production has been steadily diminishing until, in 1937-38 there has been an actual deficit of 15 per cent, while the food supply actually available for consumption diminished by 7 per cent, as compared with 1910-1915. On the whole the food position has shown, in recent years, a striking deterioration.

Deficit in India's Food Supply

On the basis of the weighted average number of caloric requirements, measured at 2,600 and 2,800 calories, representing the daily gross per capita food requirement, which would allow 200 calories for wastage during distribution in the kitchen and at the table (or on the floor). **India has now fallen short of food for 48 millions of her average men.** Her deficit, per average man daily ration, is 423 calories.

The deficit in the food supply will be evident from the following:

- | | |
|---|-------------------------|
| 1. India's population in 1931 | 353 millions. |
| 2. India's population capacity on the basis of her food supply in 1931 | 291 millions. |
| 3. India's Food shortage in 1931 | 42 billion calories. |
| 4. India's population in 1935 | 377 millions. |
| 5. India's addition to food supply between 1931 and 1935 | 30.3 billion calories. |
| 6. India's food supply | 280.4 billion calories. |
| 7. India's food needs | 321.5 billion calories. |
| 8. India's population capacity in 1935 | 329 millions. |
| 9. India's food shortage in 1935 | 41.1 billion calories. |
| 10. The number of 'average men' estimated without food, assuring that others obtain their normal daily ration | 48 millions. |

Index Numbers of Variation of Population and Food Supply in India

Average of Five Years 1910-1911 to 1914-1915 base.	Population	Food Production Weighted	Food supply available for consumption (Unweighted)	Excess or Deficit of Food Supply Index in Relation to Population Index
	100	100	100	
1915-16	103	129	125	+22
1916-17	104	135	126	+22
1917-18	104	130	122	+18
1918-19	105	91	87	-18
1919-20	100	130	113	+13
1920-21	99	99	99	0
1921-22	100	127	120	+20
1922-23	101	144	125	+24
1923-24	101	129	109	+8
1924-25	101	121	103	+2
1925-26	101	121	113	+12
1926-27	102	126	117	+15
1927-28	102	117	111	+9
1928-29	103	118	120	+17
1929-30	104	123	122	+18
1930-31	107	126	123	+16
1931-32	114	126	122	+8
1932-33	117	124	123	+6
1933-34	118	123	122	+4
1934-35	120	125	123	+3
1935-36	121	115	122	+1
1936-37	123	123	128	+5
1937-38	125	110	118	-7

N.B.—Weights are assigned according to protein values. Food supply available for consumption is computed after deducting exports, seeds amounting, roughly, to 1 million tons per every 209 million acres of food grains and 10 per cent wastage, and adding imports of sugar and cereals.

Relative Increase of the Less Nutritive Cereals

India not merely shows a deficit in the quantity of food production in relation to population increase, but also steady deterioration of the quality of her food grains. There has been a continuous increase of the production of the inferior food grains at the cost of rice and wheat during the last thirty years, which is a tendency ominous for the general food position. The following table gives the index numbers of production of chief cereals between 1910-38.

Relative Expansion of the Less Nutritive Cereals.

Index Numbers of the Output for each Quinquennium
Variation Percentage.

		1910-15	1915-20	1920-25	1925-30	1930-35	1935-38	1910-38
<i>Superior Cereals.</i>								
Rice	..	100	114.0	108.4	107.2	110.2	103.5	3.5
Wheat	..	100	96.2	93.4	93.0	97.8	104.2	4.2
<i>Inferior Cereals.</i>								
Jowar	..	100	157.4	167.0	210.8	207.8	209.7	+109.75
Barley	..	100	224.2	202.6	172.2	173.4	157.1	+67.1
Bajra	..	100	114.0	105.0	126.0	125.0	125.0	+25.0
Maize	..	100	114.0	100.0	106.0	112.0	105.0	+5.0

It is evident that during the period 1910-1933, while the production of such cereals as rice and wheat increased by 3.5 and 4.2 per cent respectively, jowar increased by 109.7 per cent, barley by 57.1 per cent, bajra by 25 per cent and maize by 5.0 per cent. The preference of barley and millets to wheat is due to the higher cost of cultivation of the latter crop. Poverty, indebtedness and fractionalisation of holdings, all contribute to the vogue of cultivation of barley and gram with wheat and the consumption of *bejhar* i.e., mixture of wheat, barley and gram, in place of pure wheat. Inferior cereals are cheaper to grow and this also decides the nature of consumption of subsistence farmers.

It is barely for two or three months that wheat is accordingly consumed by the small cultivators in the U.P. whose food mixtures depend upon solvency and the proportions of cereals grown from season to season in their

tiny holdings. The following schedule of consumption of grains would be typical:

Months	Consumption
September to November	Rice and Maize.
December to April	Mixture of Jowar, barley, pea and gram; or of jowar, bajra, lobia and maize.
May to August	Mixture of wheat and barley; or of wheat, barley and gram; or of bajra, jowar and lobia.

As we go down in the economic scale the proportion of barley, which is the cheapest grain, is increased in the food mixture. The deprivation of wheat, which yields more fat and more mineral constituents per 100 calories than other food grains, tends towards deficiency or unbalance in the diet, especially as the consumption of milk, ghee, pulses and sugar also diminishes as we proceed from the higher to the lower grade income groups.

Features of a Progressive Planned Food Supply

India's agricultural policy should now be re-oriented from a new angle viz. from the standpoint of production of heavy-yielding and energy-producing crops. The aim should be to counteract the present food deficiency and unbalance and to secure more protein, which is most deficient in the dietary of the masses, from every unit of land. The features of a progressive planned food policy for India may be briefly indicated as follows:

- 1 The areas now devoted to barley, bajra, jowar and cheaper millets should be adapted to more nutritive cereals viz., rice and wheat. In Japan barley and naked barley and also millets have decreased in acreage; and rice has to a large extent taken the place of dry grains in the national diet, and is more effectively used by all classes of people. India on the other hand shows, at present, a steady increase of disparity of population increase and increase of production of the more esteemed cereals.
- 2 In regions as Bengal, Orissa and South India, where the undernourishment of cultivators is due to the preponderance of starch in a rice diet, and the inadequacy of proteins, the aim should be to grow a wide variety of pulses and beans. The latter can

maintain the same standard of production on a smaller area under cereals and fibre crops. The physiologist should also help the applied botanist to find out which peas, grams and beans will be more nutritive and more easily assimilated with wheat or rice.

- 3 Wherever the cultivation of fibre crops, like cotton and jute and of sugarcane as a similar cash crop, have altered the system of crop rotations which formerly included the protein bearing beans, pulses and oil-seeds, it would be necessary to alter the cropping with a view to prevent the deterioration of foods amongst subsistence farmers. In the United Provinces sugarcane, which remains in the land for at least nine months and generally about a year, requires long fallowing and tends to supersede pea and arhar and fodder crops, besides lowering soil fertility and the yield level of the subsequent cereals. Similarly jute in large areas in Bengal has displaced several rabi crops including pea and gram and oil-seeds. By far the most considerable portion of Indian farming is of the subsistence kind. Certain tracts growing sugarcane in Northern India and the more fertile soils of Gujerat and Berar grow money crops. It will be on the whole desirable with our increasing population pressure to prefer the food values of peas, beans, pulses and oil-seeds to the income from money crops in the case of the majority of the small holders in India.
- 4 Land may be made to yield more starch in the form of the white potato or sweet potato, which may cut down the production and consumption of rice in India. White potato grows on land too steep and too dry for rice. In the Punjab the various Scotch varieties of potatoes have yielded about 40 maunds more tubers per acre than the local varieties and are of better quality and size. Germany in recent years, with much less intensive methods than are practised in Japan, has been able to secure more starch per acre from potatoes than Japan, for instance, has secured from rice.
- 5 An increased production of root vegetables will also have to be pushed. Protein wastage in the dietary due to the formation of ammonia for neutralising acid radicals could be effectively reduced by the addition of adequate quantities of tubers

and root vegetables such as potatoes, radishes, beet-roots, onions, kachus and ols (coleocacia) many of which are not only rich in carbohydrate but also in alkali, Vitamin C and iron, and are also cheap in price. Onion and garlic, apart from their food values, are useful as antiseptic materials. An increased consumption of root vegetables will be useful in yet another way. Some of these, especially potatoes, not only yield more per acre but also require less water for cultivation.

1) Planned crop production must also take into account the relation between the nutritive quality of food grains to soil and agricultural practice. Recent investigations have shown that the wet varieties of rice are not merely heavier in yield but are richer in protein, fat, and potash contents than the dry crop variety. McCarrison found that rice grown on puddled fields had a nutritive value approximately 33 per cent more than the same rice grown under comparatively dry condition. Lowland rice contains a low content of vitamin B. Food grains, root vegetables and fodder crops treated with organic manures are found to be richer in regard to vitamins and other growth-promoting factors than those grown on synthetic manures. Tretiakov in Russia increased the protein of spring wheat from 13.48 to 16.13 per cent and the phosphorous of winter wheat from 0.77 to 1.22 per cent by fertilising with farmyard manure. Irrigation also has its effects both upon the yield and quality of food grains. Studies in the nutritive quality of crops are, however, just beginning in India, but these should ultimately guide agricultural practice, ensuring at once the combination of high yield with improved nutritive value of food-crops.

7) Certain new food crops, which grow under similar climatic and soil conditions, should be introduced into different regions of India. Every effort should be made to introduce the soya bean, the magic crop of Chinese agriculture, which has recently expanded extraordinarily in the United States and Soviet Russia. The soya is rich in both fats and proteins and is a valuable supplementary to rice. The soya flour contains over 41 per cent of protein, while wheat has less than 11; and it contains over 20 per cent of fat while wheat has just over 1 per cent. Soya also contains the 3 vitamins A, B and D, all of

which are deficient in the Indian vegetarian dietary. No pulse, gram or oil-seed contains fats and proteins to the same extent as soya bean. In India the bean is now successfully grown in the Kumaon hills; in Gujerat and Sind soya bean has also been introduced with success. In Sind the bean has grown bigger than in its original home. Systematic efforts made to popularise the soya bean will certainly meet with success in India as in Europe and America, for it is a hardy crop with a heavier yield than the other leguminous crops cultivated in India and has the capacity to resist both excess and deficiency of rainfall.

- 8 Fruit farming has also good prospects provided that communications, means of transport and marketing organisation improve and facilities of cold storage, canning and bottling are developed. There are market gardening castes like the Kachhi, Kolri and Muraon in Northern India who grow little of the staple food crops, and make large profits out of fruit, vegetables and flowers. Their fruit they sell in places as distant as Lucknow, Patna and even Lahore; their flowers are bought by the manufacturers of perfume in Jaunpore and Ghazipur: their vegetables go to the Banares market. Some of their estimated profits are Rs. 175 per bigha for a lemon orchard, Rs. 80 per bigha for a field of roses or potatoes, Rs. 60 per bigha for a field of brinjal (egg plant) or of falsa (*grewia asitica*). And for wheat the profit is Rs. 12 per bigha. In Peshawar, the Kangra Valley, Kumaon, N. Behar, N. Bengal, Assam, Northern Sirkars, Konkan and other areas in India, fruit growing is the principal occupation of a considerable number of cultivators. But both cultivation and marketing of fruits at present are entirely unorganised. Fruit farming will add to the income of cultivators and improve the quality of their dietary, while it will also lead to the development of such rural industries as the preservation of fruit and vegetable and the making of jam which will provide cultivators with alternative occupations and outlet for their surplus produce.
- 9 No useful crop planning is, however, possible unless the Indian peasant learns to take a practical view of animal keeping. It may be estimated that about 125 million cattle out of a total stock of 200 millions are superfluous and uneconomical. In Holland and Germany the State regulates not merely the breeding

from pedigree stock but also limits the number of calves which can be maintained in a herd of cattle. India must plan deliberately the reduction of her excessive cattle population so as to develop a flourishing export trade of cattle with Africa and the Dutch East Indies and a combination of intensive crop and fodder cultivation with dairying in her small holdings at home.

In considerable parts of India, such as the Canal Colonies of the Punjab and in Gujarat and the Ganges-Jamna Valley, dairy farming on a large scale is however combined with intensive farming of an improved type. In one taluka of the Kaira District Gujarat, it is estimated that there are about 50 cream producing machines and 38 casein factories where casein is produced from the remnant of the milk after cream is taken out of it. Indeed, in the Punjab colonies and Upper Ganges and Jamna plains the combination of intensive farming with cattle-breeding and dairying represents a development in the direction of mixed farming as practised in Western Europe on a scale hardly paralleled elsewhere in India. The larger holdings here enable fodder crops to be grown, which supplement the stalks of jowar, bajra and maize and straw of wheat and gram also given to cattle. The costly and powerful animals in these areas are in striking contrast with the miserable and half-starved beasts in Bihar and Bengal, providing largely for adequate nutrition of the cultivators, helping materially to preserve the soil against exhaustion and increasing its total return.

The following table would show the disparity between the excess of cattle population and daily per capita production and consumption in the major provinces.

	Number of cattle per 100 acres of sown area	Estimated Daily production per head of population (in ounces)	Estimated Daily consumption per head of population (in ounces).
Punjab	58	18.3	9.9
Bihar & Orissa ..	83	6.4	3.2
Central Provinces ..	50	6.1	0.8
United Provinces ..	90	4.7	5.0
Bombay	35	4.7	4.0
Madras	75	3.6	1.6
Bengal	112	3.1	1.9
Assam	64	1.4	2.2

It is evident that the success of production of fodder crops and the maintenance of productive cattle in the different provinces vary inversely with the number of cattle, and thus mixed farming will largely depend upon the elimination of uneconomical and superfluous live stock in the country.

- 10 The conservation of fisheries and greater use of fish as a principal article of diet. In Japan there has been an increase of 182 per cent in the consumption of fish since 1900; for anxious attention has been drawn there to the relative excess of carbohydrates and the positive lack of protein in that diet by the discovery that the value of the soya bean is greatly modified by an excess of rice. The phenomenal development of the fishing industry in Japan is represented by the fact that the number of motor-fishing boats increased from only one to more than fifty thousand at present, the Japanese share in the world's total sea fishery production being over 35 per cent. Indian fish products such as dried and salted fish and fish liver oil should not only find a larger internal market than at present but may also find a place in the world market.

Planned crop production in adjustment to the nutritional needs of the rural masses can only be promoted by setting up in each Province a special Department of Applied Botany and Ecology. Close co-operation should also be established between Nutrition Research Laboratories and Agricultural and other Departments concerned with food supply. This was one of the major recommendations of the Inter-governmental Conference of Far-Eastern countries on Rural Hygiene. The nutrition worker should consult the agricultural expert about the practical possibilities of the changes and improvements in diet he recommends. Conversely, the agricultural expert should obtain experience regarding desirable improvements in diet which may be furthered by crop-planning, better agricultural techniques, selective breeding methods, improved manuring, composting, etc. Stanley Bruce of Australia coined the happy phrase 'the marriage of health and agriculture' at Geneva where he was advocating an agricultural and trade policy based on the health and efficiency of the people. Not before a marriage between agricultural and public health policies is brought about in India, that we can grapple with the problems of food supply of India's teeming millions.

CHAPTER III

SOCIAL REFORM AND LEGISLATION

In India the present population situation demands not merely a planned food policy which can bring about an increase in food production, and develop mixed farming, fruit growing and rural industrialisation that may all contribute towards improvement of the peasant's income and utilisation of surplus and idle labour but also the wisest husbandry of existing land resources.

Agricultural Planning: Conservation of Soil and Water:

India maintains the largest agricultural population on the basis of subsistence farming in small holdings. But she hardly realises that much of the soil's fertility, which is her most valuable legacy, fundamental source of her wealth and basis of prosperity, is slipping away from her. Soil erosion is the greatest single menace facing Indian agriculture today. In many areas as human and animal population has expanded beyond the limits and resources of the village fields and groves, the axe and the plough invade and appropriate all uncultivated wastes. The destruction of forest or scrub jungle and the extraction of stumps and roots lay bare the ground and expose it to the quick work of water and wind erosion. Its devastating effects vary according to soil and topography and the intensity of population pressure. With the loss of the top soil and failure to replenish the depleted plant food, when cowdung, the only available cheap manure is burnt due to the scarcity of fuel, the impoverished soil shows on the whole lesser yields. Recent investigations show that in the bare fallow fields in the foot-hills of Northern India, except properly levelled rice land, a single storm leads to the loss of soil at the rate of $1\frac{1}{2}$ tons per acre, while in the Bombay Deccan there is a loss of 133 tons of soil per acre per annum from a field of jowar. In the face of rapid scouring of the soil, the improvement of crop varieties or introduction of chemicals are more or less a drop in the bucket of productivity. Such scouring is especially acute in India along the Himalayan foot-hills and sloping ground throughout Northern India, in parts of Madras, the Bombay Deccan, the outer provinces, the Punjab and the Central Provinces, Chota Nagpur and Central India. Besides, along the banks of

most of the bigger rivers soil erosion has led to the formation of a vast and intricate network of fissures and gulleys and the loss of invaluable agricultural land. Soil erosion is responsible for 8 million acres of ravine lands in the U.P., for the man-made desert between Rajputana and the United Provinces, which is now invading her south-western districts, and for the partial filling in of reservoirs and choking of irrigation courses in the Punjab and United Provinces. Ravine formation is a serious and increasing menace to agriculture in the village in several parts of the Ganges plain. In one particular district in the United Provinces there are about 12 lakhs of acres of ravine land, and 1,000 acres of good cultivable land are annually lost to cultivation as the result of erosion. In those parts of India where the rainfall is deficient, soil-erosion is also aided by wind-erosion.

It is in the United States that we find the most comprehensive planned combat with erosion. Twenty-two states have passed laws for the creation of soil conservation districts. In India only comparatively small areas of forests are under Government management; forest officers are few, while legislation is also inadequate. Forest conservation and replanting, gully-plugging, terracing and levelling of fields, and strengthening of field banks by growing fodder crops are the major control measures necessary for dry, badly eroded areas in India. The construction of dams, *bandhs* and embankments, combined with the development of many terraced pits which are built out along the sides of the ravines and on the steeply sloping land, will also be found useful in erosion and gully control in moist zones. Such measures have been taken in some parts of the Punjab and the U. P., but the work is but a small fraction of what is now necessary. Only one province, viz., the Punjab, has become alive to this menace and is about to create a special department to deal with soil-erosion. The problem is also bound up with the regulation of excessive and indiscriminate grazing of herds and flocks. The Forest Department should extend its activities along the line of co-operation with the cultivator, who is faced with increasing fodder shortage for his multiplying cattle. It is found in some areas that the cutting of grass for cattle instead of permitting them to graze in it, results in a greater yield. Without the co-operation of village *panchayats* in the control of grazing and improvement of natural grasslands, many fertile areas in India would share the fate of the *Brajabhumi*, once flowing with milk and honey, but

now stripped entirely of its vegetative covering, a cattle-made desert extending over several hundreds of square miles in the heart of the world's most fertile plain. In the face of the mass movement which has synchronised with the advent of autonomy in the Provinces, there is special danger of preferring the immediate demands of the peasantry for free grazing of cattle and relaxation of forest control to the needs of the generations yet unborn. That danger aggravated every decade by the quick multiplication of humanity and its cattle, the improvident consumption of their capital assets of soil, trees and grass and the increase of ecologic disbalance of soil, vegetation and water. Such disbalance leads not only to diminishing returns in agriculture but also to an increase of aridity, especially in the zones of precarious rainfall, which makes replanting of forest and grass in any area, denuded by nature, man or cattle, impossible. If the man-made desert between Rajputana and the United Provinces is now protruding its dry, thirsty tongues into the south-western parts of the Ganges Valley, man's improvident exploitation of timber, fuel and grass in the Himalayas is a similar crime which brings about devastating recurrent floods and jeopardises the agriculture of the plains from the Punjab to Assam.

Co-ordinated Development of Forestry, Erosion and Flood Control

Land planning and water planning are interlocked with each other. Soil washed from the hill slopes, fallow lands and pastures tends to fill reservoirs, clog irrigation courses and stream-channels. Agriculture, irrigation and navigation are all affected. The denudation of the Himalayan slopes, the undue increase of cultivation on the hill-sides and the seasonal concentration of migrant flocks along the travel routes leading to the meadows of the upper ranges have brought about unmeasured losses of soil and water, and will be an increasing menace to irrigation and agriculture in the valleys below. In the Punjab, soil erosion has increased, the load of silt derived from the Jammu and Gujarat foot-hills which is carried by the Jhelum River, and this has decreased the carrying capacity of the upper Jhelum Canal by 40 per cent., even after the expansive installation of a number of silt-ejectors. The increase of the run-off and loss of soil in the less adequately covered hill slopes of the Tehri-Garhwal region will, it may be expected, similarly result in the partial filling in of reservoirs and the clogging of irrigation ditches before long, to say

nothing of the difficulty which will be caused by the sediment in operating many of the hydro-electric plants.

In the United States the Tennessee Valley Authority created by the Congress in 1933 is the most interesting regional planning agency for the co-ordinated development of agriculture, forestry, navigation, soil-erosion and flood control. Similar regional authorities, composed of planning boards of different States, have been proposed for various other river valleys. In India irrigation and water problems should no longer be treated as Provincial subjects. In the up-river areas the expansion of agriculture and population involves deforestation, soil-erosion and interference with the river system which give rise to problems of more than a local significance. As population has multiplied and the plough and the axe have ascended the hill-sides, the destruction of forests in the catchment areas of the rivers and their tributaries has caused rapid run-off and erosion leading to the deposit of an increasing mass of debris on river-beds in low lands, thus increasing the damage from floods. The Goghra, the Gandak and the Kosi, the Sone and the Suvarnarekha, the Ajaya, and the Damodar, the Tiesta, the Padma and the Brahmaputra, the Mahanadi and the Godavari—all bring floods which are in large measures due to deforestation in the hills. Floods leave a legacy of disease and soil exhaustion. In some areas floods lead to salt encrustation; in others the flood water which might be utilised to flush the malaria-breeding pools and replenish the soil with fertilising silt, is allowed to run to waste. The rescue of agriculture is accordingly connected with afforestation, river management and agricultural and irrigation engineering. The increasing severity and frequency of floods in recent years in Bihar, Orissa and Bengal are due to man's invasion of the cradle of streams and trees. Over-grazing by countless flocks of cattle, sheep and goats in the up-river areas causes much erosion. The evil of the extension of ravine lands is not confined to the United Provinces and the Punjab but extends to the Bengal and Sind Delta where the removal of soils of whole valleys by denudation has led to the silting up of river beds and the meandering rivers. The reclamation of swamps in Oudh, the eastern districts of the U.P., Northern Bihar and Assam has also forced an exceedingly heavy run-off. It is estimated that the Ganges now carries to the sea eight times the quantity of silt carried by the Mississippi, and that from a catchment area less than one-third the size. "It is not without significance", reports an irrigation engi-

neer, "that the highest recorded flood in the Ganges occurred in 1924 and that the lowest recorded winter discharge occurred in 1929." There are records of the Ganges for over a century, and the period is long enough to exclude all seasonal cycles. Unplanned canal extension, following the demands of phenomenal population and agricultural expansion in the U.P., and the Punjab, has greatly aided the silting-up process through the diversion of vast volumes of water. Approximately 20,000 cusecs are abstracted from the Ganges and by the Ganges and the Sarda Canals, amounting to 30 or 40 per cent of the total discharge of the River Ganges. There has resulted probably a general reduction of summer level of the Ganges by two or three feet which has thereby increased the difficulty of maintaining the connection between the main river and its feeders and channels in the Bengal Delta.

Need of an Inter-Provincial or Federal Development

Authority

Many agricultural and economic problems can be dealt with adequately only as integral parts of a unified plan for a complete river watershed as a great natural territorial unit. Thus, in India we ought to have a Ganges River and an Indus River Commission, a Godavari Board and a Cauvery Board, which should arbitrate between the conflicting claims of agriculture and canal irrigation in the up-river areas and navigation and lagoon irrigation in the down-river areas; and adopt systematic, co-ordinated measures of afforestation, flood control and river management. Russia has recently completed the Volga canal extension scheme, bringing the Volga water to the very doors of Moscow, which has been linked with the Caspian sea, and through other water routes, existing or soon to be built with the Baltic, the White, the Azov and the Black Seas. The work of excavation, which was almost twice as much on the Suez Canal, was mainly entrusted to thousands of former criminals and law-breakers who were caught up by the enthusiasm and energy of the great socialist project. Bengal's river-borne traffic is probably the largest in the world, but it still can be enlarged enormously in volume through planned canalisation in Southern and Eastern Bengal, which might remove the congestion of waters in the lower delta and resuscitate the waterways in the moribund delta. Sind, which is a deficit Province, can enormously increase her wealth through the full utilisation of her water resources by planned canalisation and irriga-

tion development. Planned hydraulic and agricultural reclamation of formerly malaria-stricken marshes has achieved wonders in Fascist Italy. Fourteen per cent of the national territory has been protected or transformed and several new towns and agricultural colonies built, to which the surplus population from over-crowded areas is now being diverted. There is a State inland migration and re-settlement department for agricultural recolonisation. Malaria and agricultural decay in Northern Bihar, Central and Western Bengal are now spreading like an infection from the dead river zone to the entire river valley. Whether we think of afforestation, erosion-control or hydro-electric development, flood prevention, river management or re-settlement, the solution lies in each case in the co-ordination of planning under a centralised, inter-provincial or federal development authority.

Planned Soil Conservation: Utilisation of Human Excrements

Planned soil conservation is also an urgent need in India where evidence of depletion of phosphates in the rice growing tracts of Bihar, Orissa and Madras has been discerned. The importance of an adequate supply of phosphates is two-fold in the present agricultural situation in India. For not only does any phosphate deficiency reduce the yield but it also seriously lowers the food value of the crop both in grain and straw. On the other hand, in the dry regions of Bombay, Deccan, the Central Provinces and Madras evidence of soil exhaustion is forthcoming in the absence of regular and systematic manuring, of deep tillage or of the omission of nitrogen fixing legumes with the introduction of cotton. As forests and village groves have shrunk, fuel has become scarcer and this has led to the use of cowdung as fuel. Conversely the major difference between Indian and the Japanese agriculture, where wheat and rice yields are one-half and 2 times greater than in India, lies in the utilisation of animal and human excrements. There is no reason apart from prejudice why the methods of utilising the night-soil adopted by the Chinese and the Japanese should not be followed in India. By some preliminary treatment such as composting as is carried out by the Chinese, the risk of infection can be minimised. In India we are not only burning dung but also exporting to foreign countries bones and oil-seeds. The oil-cakes and bones would have served as important sources of manure. There are abundant supplies of waste organic matter, such

as paddy-husk, sugarcane trash, grasses of various kinds and many other substances, and it may be possible to bring about a similar fermentation of such materials as has been accomplished at Rothamstead in the preparation of artificial farmyard manure. An important source of soil renewal, within the means of the cultivator in many parts of India, is compost made from all kinds of waste vegetable matter, wood ashes and a certain amount of cow-dung after the manner in vogue in China and Japan. In China "everything which can be made edible serves as food for man or domestic animals. Whatever cannot be eaten or worn is used for fuel. The wastes of the body, of fuel, and of fabric worn beyond other uses are taken back to the field; before being taken there they are housed against waste from weather, compounded with intelligence and forethought and patiently laboured with through one, three or even six months, to bring them into the most efficient form to serve as manure for the soil or as feed for the crop."*

Reform of Food Habits

Not only should natural and organic resources be conserved in every sphere so that an increased population may not be faced with both chronic food shortage and chronic ecologic disbalance, but food habits also have got to be reformed. Among the rural masses the supply of protein could be increased by the introduction of eggs, mutton, pork and bacon which is consumed by the peasantry in China. The Chinese satisfy their craving for protein also by eating rats, dogs and other animals as well as dried fish. Dried fish is largely consumed in South-western India, but elsewhere though the fish supply is diminishing fish is largely wasted. If India could maintain, as China does, more pigs, goats and poultry, subsisting on by-products of agriculture and supplying animal proteins to the dietary, than superfluous and uneconomical cattle, she would be able to improve her food position immensely. India's vegetarianism which is largely a matter of economic necessity due to the disadvantage of raising animals that compete men with food has become physiologically disadvantageous due to the lack of milk and milk products. With reference to the main cereals viz. wheat and rice, highly milled rice, and white wheatened flour, the consumption of which is spreading from the upper classes to the rural population are both deficient in Vitamin B, and it will be necessary to restore the healthy habit of consuming home-pounded rice and

*Robertson Scott : The Foundations of Japan.

atta and to check the spread of rice and wheat mills in the rural areas. Inappropriate food preparation also leads to a good deal of waste and loss of nutrient materials of food stuffs. The parboiling of rice and its subsequent drying in the sun deprive the food grain of such small amounts of Vitamin A as it originally contained.

Improvement of Food Preparation

Many vegetables are cooked in such manner in India that leads to the destruction of vitamin contents. Another significant instance of inappropriate food preparation is afforded by the use of boiled ghee. Vitamin A has been found fairly stable at temperatures upto 125°C., but is rapidly destroyed at higher temperatures. Throughout India ghee is subjected to high temperatures and thus Vitamin A is completely lost. The loss of the yellow colour of ghee runs parallel with the loss of Vitamin A and it takes a longer time for the buffalo ghee to lose its yellow colour. Unbalanced food, like deficient food, is in no small measure responsible for the bad feeding of children and mothers in India and for high infantile and maternal mortality which is preventible. In large areas of Southern India, where milled rice is the staple article of diet, nearly all the pregnant females are in a state of avitaminosis B. As a result the incidence of premature births is three times as great as it is in the north of India (where wheat is the staple diet), and in consequence the infant mortality rate also is many times greater. The shortage of Ca and P is often a serious factor.

Lines of Social Reform

All social customs, religious taboos and injunctions which now stand in the way of the husbandry of soil resources and efficient utilisation of available food resources have now to be abjured. They are too numerous to mention. One most important reform certainly would consist in getting over the social and religious prejudice which would prefer the agony of famished cattle peeked to death by vultures in the field to the sale for slaughter of superfluous and useless animals which make the upkeep and breeding of superior live-stock impossible, increase the burden on the ill-nourished soil, and trench upon human food resources. We should not make a fetish of vegetarianism and waste edible fish, oyster, poultry and eggs wherever and whenever available. Nor should the prejudice against the use of the night soil make us waste one of the

most important manures for the soil and feeds for the crop. Many traditions prevent peasant families from driving the plough thus raising the cost of cultivation due to the employment of hired labour. These also prevent them from adopting several subsidiary occupations such as tanning hides and skins, vegetable gardening, poultry farming, silk rearing, bee keeping, weaving, fishing and pottery without incurring social opprobrium. It is also unfortunate that the lower agricultural castes which through sturdy toil and thrift have risen higher in the economic scale would tend to ape their superiors, employing more hired labour in the fields, spending more on social ceremonies and foregoing some remunerative subsidiary occupations as below them. Caste opinions must change in order that the sturdy, lower agricultural castes of India, who are thoroughbreds of the soil, may keep their holdings and may not sacrifice the hard-won acquisitions of decades to a false social dignity which has been the chief reason why many hereditary cultivating higher castes have lost ground in India in the recent decades.

The law of inheritance which now permits undue subdivisions of holdings without the supervising authority of the village communities is the root cause of many serious agricultural inconveniences and unless this law is changed agriculture cannot be rationalised. A mere administrative measure of consolidation of holdings will be only temporary in its effects while a programme of consolidation of cropping i.e., the cultivation of the same crops in contiguous fields does not go far enough.

Belief in the sacredness of the cow, untouchability, taboo against the use as manure of excrements other than those of cattle, taboo against several small crafts and callings, and against even the use of the plough and the divisibility of every kind of agricultural capital, share, holding, plot, house, grove, pond and even trees, prevent wise land utilisation, and even lead to a squandering of land resources.

Abolition of Waste of all kinds

Human resources are even more appallingly wasted and dissipated. Universal marriage and the social sanction and encouragement of child marriage, especially among the lower castes who also allow their widows to marry again, promote excessive multiplication. Thrift has also declined due to the increase of agricultural unemployment and poverty, change in the distribution of wealth and land resources which has created a disparity of economic oppor-

tunities and the extinction of several cottage industries and handicrafts. Hypergamy, a heavy bride price and an expensive and elaborate marriage ceremony contribute towards the cumulative increase of mortgage debt which is of no account to the land. The fruits of hard labour for years are wasted for caste dinners and rejoicings, when if stored in a Savings Bank or a Co-operative Society they would have provided medical treatment for ailing children and would have saved the family as the years impair the vitality. Litigation is also a great curse in the village and its cost is ruinous to agriculture and the peasant-family. How much loss to agricultural operations and increase of mortgage debt due to loss of cattle could have been prevented if our peasants had knowledge of proper segregation of infected cattle during cattle epidemics or had grown their proper fodder in times of scarcity! How much human mortality and economic loss could have been prevented in years of epidemics through diffusion of knowledge regarding the major diseases and the value of proper treatment, of evacuation of infected places and of inoculation!

The Co-operative movement in its social aspects is doing a lot in bringing about re-adjustments in social life so long as social legislation remains a relatively new conception to the rural masses. Co-operative Societies for consolidation of holdings, better farming societies, better living societies, crop protection societies, co-operative adult schools, co-operative medical societies, cash or grain thrift societies, all have taken roots in different parts of India, and especially in the Punjab which still remains the most fertile field of experiments in 'social' co-operation. Such societies should spread much more before we can expect a change in the social attitudes of the masses. Where the social readjustment is urgently necessary we have to depend upon legislation rather than upon Co-operative Societies, which, though they have shown greater flexibility and variegation of purposes in India than in any other country in the world, yet can lead to but very tardy and chequered advance.

Lines of Social Legislation

Social legislation is called for urgently at least in the following directions for combating the effects of population maladjustment and poverty:

- (1) Modification of the laws of inheritance and introduction of the law of preferred heir.

- (2). The limitation of the number of calves which can be maintained in a herd of cattle, as in Germany and other countries and the introduction of compulsory castration of scrub bullocks and ringing of bad cows.
- (3) The limitation of the expenditure for marriages and family and caste ceremonies.
- (4) Prohibition.
- (5) Compulsory free education.
- (6). The abolition of untouchability and the provision of sites in the villages for the exterior castes.
- (7) The gradual raising of the marriage age to 15-20.
- (8) The abolition of polygamy.

For social amelioration the attack must simultaneously be made on several fronts. Scientific land utilisation, better farming and living, thrift, prevention of waste and extravagance of all kinds and control of the size of the family—all must aid one another, for each without the others must fail. Legislation will be necessary for a successful offensive in one front or other in order to cut the vicious circle which widens itself as it gains in stability and strength.

Birth Control versus Abortion

Even the child marriage restraint law which is intended to bring down maternal and infantile mortality and to extend the opportunities of education and better living will in all probability increase the population by increasing both fertility and survival. It has, therefore, to be backed up by the programme of birth control for the masses in the country.

In India abortion is more widespread than it is generally realised. Such abortion is chiefly due to the unbalanced character of the Indian diet and deficiency in essential minerals and vitamins. Among cattle in India irregular breeding and abortion have been regarded by experts as probably due to faulty dieting on a calcium and Vitamin A deficient ration. Investigations in the United Provinces have shown that calcium is the most consistent deficiency in the diet of farmers who indicate a shortage of about 20 per cent especially in the summer months when milk and milk products and raw cane sugar generally used in the villages become scarce. In other parts of India as well, deficiency in respect of calcium is found to be as great as deficiency of protein. Malnutrition causes amongst Indian women irregularity of menstruation and hypoplasia

of the reproductive system, which explain largely both sterility as well as high incidence of abortion. The abortion rate for the general population in India has been estimated by Spackman at 10 per cent of total pregnancies. Reckoning the live-births in India at 14 million per annum and adding 1 million for still-births, the total pregnancies would be 16½ million and total abortion 16½ lacs per annum. Abortion is also brought about artificially. Early abortion is not uncommon in India effected by crude methods which are highly dangerous and damaging.

Birth control would prevent the undesired or undesirable pregnancy by methods which are safer and surer than those now in vogue. Where maternity would be desired or accepted it is only adequate nutrition and medical attention that will prevent natural or spontaneous miscarriage and enable the pregnancy to continue to its full term resulting in the production of a healthy child. With the spread of contraceptive knowledge, then abortions will be reduced and the high maternal mortality due to too early and frequent maternity as well as child mortality will largely diminish.

The Dysgenic Trend

On the other hand, with family limitation agricultural holdings will be less subdivided, the standard of farming will improve, and there will be a greater desire in the family for more education, and leisure and for a few luxuries of life. With an improvement of nutrition for several generations, spontaneous abortion will be reduced and instead of the present appalling waste of fertility with its accompaniments of agony, sorrow and disease, there will be an adaptive fertility. Not only have we not reached any adaptive fertility in the country, which therefore suffers from the effects of heavy population pressure and terrible waste of life spilling on all sides, but the disparity in the natural increase of different social strata shows a distinct trend of mispopulation. Throughout India the backward sections are more progressive demologically than the rest of the population but that:

- (a) They are less long-lived than the others.
- (b) The adult group is the most predominant amongst the advanced castes and communities in which the aged also bulk most largely; and finally

(c) The general increase of population, is more in evidence among the more fertile but less intellectual strata of society.

Number of Males Per Mille. Aged.

	0-6	Age	7-13	14-16	Age	17-23	24-43	44 and over
—Advanced castes.								
I. United Provinces								
Brahman	320	(0-13)		488	(14-23)			192
Kayastha	350	(0-13)		503	(14-43)			192
II. Bihar								
Brahman	159		165	68		121	306	181
Kayastha	164		168	65		116	295	192
III. Bengal								
Brahman	163		156	68		143	308	162
Kayastha	172		166	70		135	289	168
Baidya	173		172	85		141	261	168
B.—Intermediate Castes.								
I. United Provinces.								
Rajput	322	(0-13)		493	(14-43)			185
Kurmi	340	(0-13)		495	(14-43)			165
II. Bihar								
Rajput	159		169	64		115	309	184
III. Bengal								
Mahsya	174		169	69		132	301	155
C.—Illiterate Castes, including Muslims.								
I. United Provinces.								
Chamar	381	(0-13)		480	(14-43)			139
Mhir	360	(0-13)		482	(14-43)			155
Pasi	384	(0-13)		473	(14-43)			143
Jolaha	387	(0-13)		455	(14-43)			158
II. Bihar.								
Goala (Hind.)	189		186	62		102	303	158
Santal	218		190	70		115	290	117
Musahar	215		193	61		92	291	148
III. Bengal.								
Namasudra	180		177	65		126	286	166
Dom	168		159	60		117	344	152
Jaliya Kaibarta	183		160	71		125	293	168
Jolaha	192		188	61		118	304	157

It will be seen that the percentage of children among the advanced and intermediate castes is strikingly low in Bihar and Bengal, but the percentage increases steadily as we proceed downward in the scale of caste and literacy, until the figures for the illiterate castes are very high. Secondly, as we descend the scale of caste and literacy, the proportion of the adult population diminishes. The last two columns show clearly how much lower the survival value is in the case of the illiterate castes. The survival value increases as we ascend the social scale, being the greatest in the case of the United Provinces and Bihar Kayastha.

It is notably low in the cases of the Santal of Bihar, the Pasi, Chamar and Jolaha of the United Provinces and the Dom and Jolaha of Bengal. The Muslims in Bihar and Bengal are more numerous in the early age periods, and their survival value diminishes as we proceed from the west to the east and is the same as that of the intermediate Hindu castes of the United Provinces, and also approximates to that of the Hindu illiterate castes in Bihar and Bengal.

Eugenic Measures

An eugenic programme will include inter-caste marriage, affording a basis for a better selection, widow-remarriage and the abolition of hypergamy, dowry and bride purchase, as well as of regional, sectional and other barriers to inter-marriage among the upper Hindu castes. In agriculture the long accustomed aversion of the upper-caste Hindus to manual labour and their dwindling strength have become serious handicaps. In the economics of the fields the Rajputs of the United Provinces, for instance, have in recent years lost a considerable area of land, while the Lodha, Muraos, Chamars and Pasis have all gained considerably, as they certainly deserve to gain, in spite of certain differential treatment meted out to them by the upper-class Hindu landlords, and moneylenders. Not only the Rajputs but the Brahmans, the Kayasthas and other high castes who own good landed property, but disdain to drive the plough, are going down in face of the unequal economic competition of lower agricultural castes who are proving superior in land utilisation and whose very numbers will in future add to their economic and political advantage. Thus the social attitudes as regards manual toil aggravate the effects of dysgenic customs and practices in bringing about a gradual predominance of the inferior social strata. As education has spread contraceptive practice has been adopted by the advanced castes, and in the absence of birth control propaganda the mispopulation will be more manifest. No doubt birth control is being adopted by the upper classes in the towns of the major Provinces, and this demands all the more the diffusion of its knowledge among the masses to prevent the deterioration of the racial make-up.

Diffusion of Contraceptive knowledge

The practical methods by which knowledge of contraceptive methods could be diffused are:

- (1) The inclusion in all medical colleges in India of courses on contraception.
- (2) The training of women doctors and nurses all over India in this regard.
- (3) The establishment of birth control clinics where supplies should be given free, preferably in connection with maternity, welfare centres, health units and hospitals.
- (4) The encouragement of the local manufacture of the material, whether rubber, cotton or chemical, which will be used for the purpose of contraception in order to bring the cost within the reach of the masses.
- (5) Propaganda amongst the masses through Municipalities, District Boards and Panchayats in favour of 2-4 years spacing of births and the limitation of the total family to 4 children in India.

CHAPTER IV

UNEMPLOYMENT AND INDUSTRIES

Population and Unemployment

1. **Extent of Unemployment:**—As there are no statistics of unemployment maintained in India, we have to take resort to very indirect methods of assessing the extent of unemployment in the country. To begin with, there is the obvious case of unproductive persons such as beggars and vagrants. The number of such persons, classed as unproductive, was according to the census of 1931, 1.7 Million for the whole of India, 1.2 for British India, and .5 for Indian States. The class of insufficiently described occupations represents in a large measure persons without a steady employment. Their number for all India, British India and Indian States was, in 1931, 8½ Million, 6½ Million and 2 Million respectively. The 1% unproductive, and the 5% insufficiently described persons claiming to follow an occupation must really be considered as unemployed, in the sense that they have no steady and socially useful employment. Considering that this percentage is from among the persons returned as employed, it will be seen that the percentage of total population represented by these figures will be considerably lower.

In a paper read before the Economic subsection of the 2nd All India Population Conference held in Bombay, Mr. P. K. Wattal, the Chairman of the section, has estimated the extent of unemployment in India according to the following method.

“From the total male population we deduct the male population of the ages 0 to 10 and 60 and over. This gives us the total adult male population of employable age. From this we further deduct the male population suffering from infirmities such as insanity, blindness, deaf-muteness, leprosy, etc., and aged 10 to 60. This figure we call ‘A’. The census returns also give us the total non-working male population. From this we deduct the male population of ages 0 to 10 and 60 and over. We further deduct the male population suffering from infirmities and aged 10 to 60. We then arrive at the total male non-working able-bodied population aged 10 to 60. This figure we call ‘B’. The percentage of non-working able-bodied males aged 10 to 60, or ‘B’, to the total male able-bodied population aged 10 to

60, or 'A', is the percentage of unemployment with which we have to reckon".

Following this method, which is the only one that has hitherto been used with any assurance, Mr. Wattal arrives at the following figures of the present position and trend of unemployment in India.

Year of census.	Total able-bodied male population aged 10 to 60.	Total non-working able-bodied male population aged 10—60	Percentage— of column 3 to Column 2
1901	103,121,700	7,308,464	7.1
1911	109,862,123	8,336,702	7.6
1921	112,120,767	11,510,924	10.3
1931	124,015,009	17,720,365	14.2

2. **Nature of unemployment:**—These figures are striking. But to read full meaning into them we must add the fact that a large number of those returned as employed in agriculture, about 110 million, are as a rule unemployed for over one-third of the year. Those who are engaged in village and cottage industries are also unemployed for considerable period. The figure of total unemployment in India would thus be a very high one. A complete cessation of work for the whole year would indeed be rare, except in the case of such organised and specialised professions such as seamen.

The main difference between unemployment in India and that in industrially advanced countries is that the purely technological or industrial unemployment forms a very small fraction of our total unemployment. In the large scale industries that have been established in the country, the process of rationalisation does indeed produce unemployment among persons who have been habitually employed in the same. There is reason to believe that such unemployment has recently been on the increase, though in the absence of any scheme of insurance there are no reliable statistics of its size. Even apart from the process of rationalisation, the normal movement of the markets tends to unsettle conditions of employment in all industries dependent on the market. A 'Reserve' of unemployed tends to be built up. The actual size and movement of this class of unemployment has also not been measured.

By far the most important aspect of unemployment in India is, however, the absolute lack of productive employ-

ment for a large mass of the population. The condition of our agriculture and of a large number of handicrafts is such that even at the best of times full time year-long employment is not offered by them to those who are normally employed in them. The number of casual workers in agriculture as well as manufactures is very great. Thus over and above the normal problem of dynamic unemployment which obtains in India in common with the rest of the civilised world, we have our problem of absolute underemployment. The latter intensifies the former but constitutes a very important problem by itself.

3. **Causes:**—So far as the industrial unemployment of a periodic nature is concerned the causes in India are the same as elsewhere. Unemployment in this sense is an incident of dynamic economic conditions, and especially of the trade cycle. So far as planned and regulated industrial policy can reduce the fluctuating nature of employment, a timely introduction of a policy of planning in India is bound to reduce the chances of frequent and intensified unemployment among industrial workers. So far, however, as the general under and intermittent employment in the country is concerned, it is clearly the result of an undeveloped economy. In a country of unsteady climatic conditions primitive or extensive agriculture is bound to be a very inadequate, unproductive and intermittent occupation. Only a thorough rationalisation and industrialisation of rural economy can hope to do away with this kind of unemployment.

4. **Population and Unemployment:**—If we look at the causes of the general and special unemployment prevalent in India it would be obvious that there is no direct connection between unemployment and population. Economic backwardness and planlessness of industry are factors principally responsible for unemployment. These are independent of the number or trend of population. It is true that population may constitute one of the factors making for backwardness and an undesirable fluctuation in the economic system. Most people agree that we have a population in excess of the optimum and that the rate of increase is also higher than is needed to make the best of our present resources, including efficiency of organisation. If this is conceded, it is true to say that the difficulties of adjustment and progress are the greater in India on account of an excessive population increase in relation to the prospects of progress-rate. This would, however, be a short term view of the matter, though nonetheless entitled to con-

sideration, on that account. The economic backwardness in itself, as also the absence of rational control and guidance of the economic life of the community constitute more important causes of unemployment. These are for the most part independent of the rate of population growth. Unemployment and under-employment in India are the symptoms of an economically unprogressive society. Nothing short of a revolution in the outlook, habits and industrial organisation of the country will solve the wider problem.

5. **Present conditions:**—Whether we take the number of unproductive and unspecified workers, or of the unemployed as worked out by Mr. Wattal, or of the landless labourers, a class which suffers from chronic underemployment coupled with long periods of unemployment, we shall have an idea of the all pervading nature of the problem. Wherever we travel in our country, in urban as well as in rural areas, we find that the man power of the nation is not fully utilised. Those who find employment in modern organised industry, or in public or semi-public departments are indeed fully and productively employed. As for the rest of the population, their capacity to contribute to national production and thus to an improvement in their own earnings and standard of life is not at all fully utilised. As has been mentioned above this is primarily due to a lack of adjustment between available productive resources including organisation on the one hand, and the available manpower. This latter does not mean only the number of population, but its employability throughout a production year. The intermittent and unbusinesslike nature of our agricultural economy renders underemployment and unemployment in rural areas almost inevitable, irrespective of the number of population. The large number of unorganised industries and occupations cater for a demand which fails to produce any continuous and profitable employment. Unless the whole tone and structure of national production in all its branches are improved and modernised, the basic problem of unsatisfactory employment in India will not be solved.

6. **Future Trend:**—As far as can be seen from the nature of economic movements now in progress, it cannot be confidently asserted that the employment situation will materially improve in the near future. It is true that there is a very noticeable movement for agricultural improvement, and in some parts, thanks to better irrigation, soil and marketing conditions, full employment may be offered to the people. But such areas in which available resources

and the prospect of their increase are satisfactory are very few. Even in these areas the rate of increase in the population would render the situation more doubtful than what it otherwise need be.

The conditions of employment in small unorganised industries are even now far from satisfactory. Not only is the inherent efficiency of most of them of a very low order, but all of them are suffering from an intensive competition from large scale industry. Attempts made to supply employment to agriculturists in part-time and supplementary occupation, almost entirely ignore the trends of employment in these very industries. Except for a few local markets and for a few specialised varieties of production it cannot be expected, nor can it be desired on purely economic grounds, that the employment offered by small scale, cottage or household industry will expand. Even if it does expand in certain cases the rate of increase cannot be presumed to be such as to compare favourably with the rate of population increase.

As for the organised industry, there have been a few striking improvements. Not only the main protected industries but a large number of secondary industries have been established in recent years. So long as tariff policy and public sentiment continue to be what they are, it may be expected that these will continue to grow. But it must be noted that the actual increase in employment offered along this line is small, considering the rate of industrial progress as also that of the population. It must also be remembered that any increase in employment brought about in respect of organised industry is very often at the cost of unorganised industries, and there is no knowing whether the total employment offered by industry, organised, and unorganised, has increased. In fact the census figures show that the percentage of population employed in industry is falling. Taking all the organised industries together the number of employed hardly exceeds 2 million.

7. Rural underemployment:—The main source of unemployment in India lies in the seasonal and unbusiness-like condition of agriculture. If the agricultural industry were freed from its dependence on the vicissitudes of the rainy season it would be easy to think of it in terms of business organisation. At present agriculture is not a business but only a method of living. If supply of water is assured, other improvements, such as scientific agriculture, use of improved implements, rotation of crops and introduction of

allied occupations could be rendered easy. With an improving agriculture, industries also will expand, as they will have an expanding market for their goods, and a source of raw materials available at their very door. The hope of improving the standard of earnings in industry and agriculture will alone strengthen the movement for a rational life of which population planning would be a part. Though it is true that an agrarian revolution, an industrial revolution and a regulated population are mutually interconnected phenomena, it seems that the complete modernisation of agriculture and of the outlook of the agriculturist are essential preliminaries to any large scale improvement in the situation regarding population and employment.

UNEMPLOYMENT AND INDUSTRIES

1. **Agriculture, a Full-time Business:**—The substance of an agricultural policy aimed at securing full and profitable employment to all those engaged in cultivation may be described in the words which supply the heading to this section. Employment must in the first instance be full time. This is possible only if the supply of water is assured. There are a few favoured parts of the country which have a seasonable rainfall enabling agriculturists to have at least two main crops. Where this is not possible some mode of irrigation has to be provided. Natural sources such as wells and streams and artificially constructed works, such as tanks and reservoirs have to be systematically thought out. The mode of tillage has to be suited to the conditions of water supply with the deliberate purpose of supplying full time occupation. The newly developed technique of dry farming has significance in this respect. Chemical research aimed at reducing the strain that a growing plant may make on available moisture has also considerable relevance to our needs. Apart from these particular measures it is clear that a detailed regional survey, correlating the needs and possibilities of each locality with the results of co-ordinated research and experience, can alone give us an idea as to what is within the reach of our immediate efforts.

It must be admitted that natural conditions, and especially the paucity of capital and organisation, may make full time profitable employment impossible in several areas, at any rate for the present. This will have to be definitely ascertained and the people concerned will have to be exhorted to adjust themselves to the implications of the situation. Either seasonal migration or comparatively

uneconomic supplementary industries can alone meet the employment situation in these areas. For the rest of the areas wherever the natural situation, especially with regard to water supply, is favourable a determined effort at popularising 'modern' farming must be made. This is possible only on State Farms which should be started for a demonstration purpose. The existence of unemployed labour and unutilised land suggests the need and feasibility of a determined effort in this direction. Incidentally, State Farms, if successful, will give the necessary incentive to modernisation of agriculture. India lacks that class of substantial, educated and enterprising farmers from whom came the first impetus to the British Agrarian Revolution. If a profitable price level is secured for some length of time it is not improbable that our agriculture may attract more capital and enterprise than it has done in the past. Such a prospect is, to say the least, improbable.

Even if it is realised, say by an early accession of political power which may be used more deliberately in the interest of the agriculturists than it has been in the past, State Farms will still have some demonstration value. For a full employment in agriculture the technique of even the small man will have to be altered, and capitalist farming can at best supply only a part of the total employment available in agriculture. Such occupations as Dairying and Poultry, Sheep Farming and Cattle Breeding depend as much on natural resources as on organisation and enterprise. A concerted industrial, monetary and agricultural policy can alone help us to realise to the full the available sources of profitable employment in these occupations. It must be repeated that in these cases local survey and local planning must be correlated to wider possibilities and organisations.

2. Supplementary Occupations:—If we take into account the peculiarities of the employment situation in our rural areas, it will be difficult to understand the enthusiasm evinced in certain quarters for the development of what are called supplementary occupations. Most of the supplementary occupations usually suggested would require steady and efficient labour which the professional farmer would not be in a position to supply. Then again, even if we ignore the difficulties in the path of supply to the part-time agricultural producer of capital and marketing organisation, it would be futile to ignore the natural result of Indian industrialisation. Apart from aiding an industry in transition, no permanent benefit can accrue to a society by bolstering

up uneconomic ways of employing capital and labour. Except for very desperate and transitional cases agriculture by itself must be made a full time job. If there are some occupations in which special advantages of material or skill create a favourable position for the population of a rural area, they may hope to have a permanent supplementary industry. It is said that silk industry is such a source to Japanese farmers. In the absence of a regional survey comprising this item, it is difficult to say to what extent such employment may be permanently assured in India.

3. Industries with a natural advantage:—If the total employment offered by industrialisation is to be maximum both in quality and quantity, our choice of industries must be primarily guided by a knowledge of their natural advantages. An abundant supply of raw materials and a large home market are advantages which many industries in India can claim. Some of these e.g., cotton textile, sugar, cement, iron and steel, have already been developed. At the present estimation of effective demand for their products most of them are nearing the stage of full development. It is possible to forecast further expansion for all these provided the tariff and the stores policy of Government is sufficiently active and sympathetic. Such industries as leather and vegetable oil seem to be indicated for further progress, though progress in these must wait as much upon the growth of internal efficiency as on protection. The peculiar position of jute industry is wellknown. Its dependence on the export markets has caused considerable unsettlement in the recent past. It is possible that the internal demand for jute products might increase. This might make for some advance in employment, but on the whole, considering the normal state of the export market for jute and jute products it appears that the jute industry cannot be expected to offer expanding employment to the people in areas now dependent on that industry.

Two departments of industrialisation are expected to employ increasing number of people in the future. One is what may be called the group of heavy industries. Engineering in all its branches, including the production of machinery and tools, motor vehicles of all kinds and ship-building, can and ought to be undertaken in India. There is every reason to expect that the demand for the products of these industries will increase along with further industrialisation. ~~The Chemical Industry is also capable of further development,~~ considering not only the present demand for its products but the increasing demand that industry and

agriculture are calculated to make for its products. In these industries and allied pursuits such as mining, a much larger number of population than are at present employed can find a productive occupation. The case of fisheries in areas adjacent to the sea is worthwhile considering. In this respect an objective food-planning policy will help both employment and nutrition.

Along with the heavy and the extractive industries must be counted the large number of subsidiary industries that are bound to crop up in response to the progress of principal industries as well as to the demands of a rising standard of the people. Employment offered by such industries, now and in prospect, is not capable of exact measurement, but it is certain that the full possibilities in this direction have not yet been realised by any means.

4. Foreign Sources and Local Markets:—A recent decision of the Government of India, in respect of the Glass Industry, brings to notice an important class of industry which may have to depend on foreign stores, either by way of raw material or accessories, but which has a promising field in other respects. Besides Glass, high count textiles may be considered to be in this class. Only a detailed survey can show all the avenues in respect of which such progress is possible. If for political, military and industrial reasons it becomes necessary to expand the scope of Indian industrialisation, a too narrow restriction of our economic efforts will be ruled out. It is only in this context that the full prospects of employment in industries can be judged.

5. Industries and Foreign Markets:—For at least two reasons it would now be impossible to think of any immediate measure of industrialisation which depends for its success on the possibilities of an export market. The limitations placed by natural resources are far greater in the case of the agricultural industry than in the manufacturing ones. There is no knowing when a foreign market may develop into a producing centre. It is not improbable that just when production is reaching the point of maximum productivity demand may fall. In an individualistic and Laissez-faire economy this risk is run by an individual. In a planned economy the risk is run by the community, whose resources are likely to be strained to the full in developing channels of expansion nearer home. For another reason, of a semi-political character, a similar caution is indicated. For some time to come at any rate the tone of commercial policy followed by modern states is likely to be **autarchic** and restrictive. Such a note is present even in the scheme

of Empire trade. We cannot, therefore, reasonably hope that for any length of time a foreign market can be assured to us. Except where our natural advantages of productive capacity are convincing, industrialisation based on foreign demands should not be encouraged by the state.

6. Transport, Banking and Insurance:—Besides the agricultural manufacturing industries there are others which also are capable of offering expanding employment to the population. Transport is already undergoing a veritable revolution in India. Not only because of the direct effects on employment of resources engaged in the transport industry, but more especially because of the ulterior effects on the organisation of rural economy, this development is of the utmost importance. It is true that the replacement of animal transport by mechanical carriage will cause some immediate injury to the interests of villagers. But the widening of the market and contact with urbanised centres will initiate a change in outlook which alone can revolutionise the structure of rural economy. Though immediate employment may fall as a result of the progress of transport, even allowing for the employment offered by the transport industry itself, the ulterior effects are bound to expand both the scope and the productivity of rural economy.

There is an important difference between the first revolution in our transport, the one brought about by the railways a couple of generations ago, and the present one brought about by the bus. The former was the result of a forced development of communications primarily for military reasons. It was ahead of the needs of national economy, and was not accompanied by any constructive measure of economic development. The difficulties that the railways in India have been encountering in recent years have been accentuated by the fact that they have been initiated and run on an uneconomic basis from the very start. The new development in bus traffic, on the other hand, meets a real need, and even under a scheme of reasonable regulation it is not only calculated to pay its way, but also to help in the most profitable utilisation of rural resources. A development in the direction of manufacturing motor cars in India is most to be desired as it will make the revolution in transport a genuinely national one.

Along with the modernisation of agriculture and the progress of industry the need for modern banking and insurance services is bound to grow. Indebtedness of an unproductive type is expected to be less with a more profitable organisation of our resources than at present. But a

transformation of the money-lending business into modern joint-stock banking is no less to be expected than the substitution of the bullock cart by the bus. Insurance is a new need, and cautiously conducted, it can offer a certain and profitable employment for many. Insurance companies have already been started in most parts of the country, and with the restrictions on improvident practices contained in the new Insurance law, further progress in this industry can be looked for with confidence.

7. Unemployment Insurance:—The problem of almost universal underemployment in India cannot be solved except by a wise industrial and population policy. But the hardship caused by ~~cyclical and technological~~ factors in organised industry can and ought to be relieved in recognised ways. From inquiries made into this subject it is clear that our scheme of unemployment insurance will have to be on somewhat different lines than those followed in Western countries. While the primary burden of relieving unemployment among persons habitually employed in an industry must be borne by the employers and the employed themselves, in an especially acute case of prolonged depression the state will have to run to the rescue. The financial and administrative framework provided for the relief of rural unemployment caused by famines can be copied with advantage for industrial unemployment. In this case the administrative authority may be the labour officer of the area, and separate financial provision proportionate to the industrial importance of the province may be made from year to year.

The fact that organised industry is taxed mostly by the central government, while liability for relief will fall on the provincial government must be taken into account. The full and early sharing of the personal income tax with the provinces, a liberal interpretation of the clauses of the constitution providing new sources of provincial taxation and federal grants proportionate to the provision made by the province concerned are some of the methods in which this difficulty might be met. The details apart, it is only proper to state here that a scheme of relief to industrially unemployed comparable at least to the famine relief provision is an urgent necessity, and there are no insuperable difficulties in the way of a reasonable scheme being prepared for the immediate future.

SOCIAL WELFARE AND EUGENICS

Organic and Hereditary Defectiveness

There are defective, infirm and socially inadequate persons in every country, but in India these rise to millions. Most civilised countries adopt in this regard systematic programmes of prevention and treatment, and some have taken measures to prevent the birth of individuals doomed by their inner nature to suffer from handicaps that make a happy and useful life impossible. While amelioration and treatment of organic defects and infirmities are both essential in order that social inadequates may prove useful and be not an excessive burden to society handicapped by food shortage, a programme of compulsory segregation and sterilisation of the feeble-minded, insane, deformed or other markedly defective persons should also be considered in India for checking increase in mental and social defectiveness.

Defective genes produce a large variety of defects and disabilities. Their influence is felt in various types of blindness, deafmutism, muscular atrophy, fragility of bones, feeble-mindedness, insanity and epilepsy. Hospital treatment, institutional care and guidance, physiotherapy, occupational therapy, segregation or detention are the methods followed in most Western countries to deal with such handicaps. Where the hereditary constitution is responsible for certain definite types of mental defect and disorder that tend to run in families, segregation would entail an expenditure that most countries could not be induced to meet, and so would represent an inadequate remedy. The effective remedy that is now being adopted in some countries for such cases is sterilisation.

In India many disabilities which could be prevented or cured persist for want of treatment and institutional care, not to speak of the feeble minded, insane and criminal persons who are yielding a plentiful crop of abnormal and anti-social individuals to the existing overplus of the human harvest.

Charity in India, whether individual or organised, does not carry with it the ideas of prevention of suffering, and the positive promotion of social welfare. The

traditional theories of private and organised charity are challenged today by a variety of economic and social circumstances, bringing about individual misfits and mal-adjustments on such a wholesale scale that a programme of prevention rather than the amelioration of unfavourable social situations has now become a national concern. Without the shift of emphasis from charity to philanthropy, from amelioration to prevention in dealing with distress, personal disorganisation and hereditary defect, public money both of Provincial Governments and Municipalities will continue to be largely wasted, and private munificence will be inadequate and powerless in the face of multiplying needs. What is of far greater social loss, human life itself will continue to be sacrificed on all sides if a programme of prevention, early treatment and ameliorative work be not taken up as a primary objective.

The Prevention of Blindness

In India we are accustomed to think of many of these defects as incurable, regardless of the modern achievements of hospital treatment, care and education in this regard, while there are very few institutions today which have before them a specially constructed programme to provide the defectives with appropriate vocational guidance and training which will enable them to be as economically independent as possible in adult life. Among these defectives the blind persons are most numerous in India, numbering 601,370 as compared with 14,000 in the United States. The blind represent 172 per lakh of population as compared with 66 deaf-mutes, 34 insane and 42 lepers. It is estimated that for every one blind person there are three persons with more or less damaged vision from eye-disease. Blindness is, therefore, the most serious problem in India as regards the number as well as the special measures necessary to cope with the handicap and make the blind to some extent economically independent in living in society. It is, however, a peculiar tragedy of Indian blindness that a large proportion of it is due to human folly and ignorance. As a matter of fact blindness is rare among educated people in India. It may be estimated that 5 lakhs of the blind persons in India would not have been blind at all if they had been treated in early years. Throughout India the glaring sunshine and the dust-laden winds of the hot weather quickly cause inflammation of the eyes. This is sometimes neglected or mishandled and results in ulceration and permanent injury. Particularly are the dangers great-

er in the western and central parts of India which are hotter, drier and dustier, and where the incidence of blindness is on the whole heavier than in the rest of India. Children's sore eyes, syphilis and small-pox are also important causes of blindness in India; and in each case the fault of the parents is complete. Ophthalmia neonatorum has been almost eliminated in the West by compulsory dropping of a weak (1 per cent.) solution of nitrate of silver into every infant's eyes at birth. Besides, if parents establish their own soundness before begetting children, many such cases of blindness may be prevented. Compulsory vaccination would also prevent not a small proportion of blindness. "Good vaccination", writes Colonel Wright "saves more eyes than all the eye-hospitals put together in India". An eye physician, Colonel Kirwan, observes, "Until crude and violently irritant remedies for conjunctivities and small affections cease to be hawked about the bazars of India and legislation is introduced to deal with the couchers of cataract, much preventable blindness will ensue". An organised campaign for cataract operations carried on through various hospitals and with the aid of local physicians can also materially reduce the incidence of blindness in all parts of India. Cataract is much more common in India than in the West due to intense heat and glare. Some eye-specialists think that cataract among the Indian peasants may also be an ocular complication of nutritional disease. Keratomalacia, which in the opinion of some medical authorities is the greatest single cause of preventable blindness in India, and trachoma are connected with wider economic issues represented by malnutrition of a large section of the Indian population. Here the removal of preventable handicaps depends upon the alleviation of poverty and a wider social and economic programme. The Purdah system and virtual confinement of upper caste women in small dark rooms, filled with the acrid smoke of cow-dung fire at which they cook their food, are responsible for greater incidence of blindness among women than among men in many of the big cities and towns in India. Here, again, inappropriate social customs and improper housing are responsible for the misfortune. In the factories undue eye-strain also plays some share in producing the blind, which could be eliminated by appropriate factory regulations. It is now admitted that the blind need special training and care. But schools set up for the blind are too few in India, while those that exist do not command adequate finances to provide for systematic instruc-

tion in industrial arts and music to which special attention should be devoted in training the blind. The training of the blind, if it begins at all, begins here at a late stage. It is now found that such training should begin in childhood with kindergarten work, for the best results are obtained from those who have had their senses of touch and sound developed in their early years. It is hoped that the All-India Blind Relief Association will devote its best efforts to investigating the causes of blindness or impaired vision, advocate measures for their elimination and extend preventive work into rural areas, where folly, ignorance, poverty and want of treatment all alike conspire to occasion the handicap. In organising a campaign of compulsory vaccination and the precaution of nitrate of silver application, or in enlisting the support of physicians and public workers for introducing cataract operations for the old and the free testing of eye-sight and provision of glasses for all children of school age in the village, the Public Health Department must take the initiative.

The Treatment of Deaf-Mutes and Cripples

Deaf-Mutes number 230,895 in India as compared with 57,084 in the United States. Deaf-muteness is not an insurmountable handicap; for it has been successfully overcome by teaching lip-reading or a combination of lip-reading and sign language in special schools to which children should be introduced earlier. In these special schools there should be provision for training in those arts and industries for which deafness is a least handicap. In India, deaf-muteness is found to occur with cretinism and goitre, and is, therefore attributed to the absence of iodine salts in the soil and also in the rivers. In the wet and hilly regions in Assam and Burma, or in parts of Baroda and the Rann of Cutch, deaf-mutism seems to have a definite connection with regional factors. As with blindness, deafness can be prevented particularly when due to ear disease. Mutism has also been discovered at times due merely to lack of training in childhood. If the deafness occurs in childhood and no special training is provided for, the deaf person becomes necessarily mute, for man learns to speak largely from hearing others. The absence of facilities for training in this regard is roughly indicated by the fact that while in Bengal there are as many as 35,000 deaf-mutes, there are only 8 institutions with a total number of students of 325. In America, in every big city there are a variety of institutions and organisations, which maintain funds for the

education of the blind and the deaf and for the blind and deaf poor, and which place hundreds of children and men and women who are victims of disfiguring accidents of crippling disease or of lingering illness, in the Curative Workshop. Here they are given combined physiotherapy and occupational therapy treatments under the direction of the physician. Instead of feeling themselves useless dependants, as in India, they become self-respecting and active. We have no figures of crippled children in India, but these would run to several lakhs. No doubt a large proportion of this handicap could be prevented through the improvement of nutrition and more widespread medical and material assistance for mothers and prospective mothers.

An Anti-Leprosy Campaign •

We now turn to a fell disease, viz. leprosy, which without causing immediate death causes a very serious handicap in adult life in India on account of both physical suffering and social excommunication. In the case of the lepers amelioration depends upon both social work and medical assistance because ignorance of the nature of the infection and the wilful concealment of the disease lead to its spread. It is estimated by a reliable medical authority that the total number of lepers in India is at least a million, though the Census records only 147,911. It is a staggering figure, indicating the colossal nature of the relief work to be undertaken. The factors which govern the distribution of leprosy are unknown, but it appears that warm, moist regions which are exposed to soil-exhaustion, where the cereal crops do not contain adequate nutriment, and are apt to fail, show a higher leprosy rate, as do also tribes and castes which have separated themselves from their hill and forest environment, and have not yet assimilated new ways of clean living in the plains; those who are accustomed to diets that are normally unbalanced or addicted to unsuitable foods, such as dry or decaying fish and rice which has been allowed to ferment, whose bodily resistance is lowered by various kinds of diseases in an unhealthy environment and who are unclean in habits. It is thus in the contact zones of hill and plains people where adaptation in clothing and ablution are not complete, that leprosy finds a suitable soil. Social work can materially check the infection from spreading where there is deliberate concealment and where the people are ignorant about the dangers of infection. Throughout India

even leper barbers, vegetable sellers, milkmen and domestic servants pursue their calling with impunity, not to speak of leper beggars in an infectious stage, crowding near temples and ghats, in the centres of pilgrimage and near bus and tram stands in the big cities and towns. In the moist regions, bites of mosquitoes, fleas and other parasites produce abrasions which lead easily to the infection. In industrial areas in Bengal where the labourers are largely recruited from the aboriginal and lower classes, the incidence rises to 6 or even 12 per cent of those examined, with a common average figure round about 1 per cent. In the coal mining area in Bihar leprosy is spreading. It is a common sight to find groups of lepers squatting together in the vegetable market at Dhanbad resorted to by miners from the surrounding territory. No mine or factory should be permitted to employ a leper. Segregation or detention of cases which are in an infectious stage are altogether unknown in India, where, the so-called "burnt-out" cases, which are no longer infectious, form the majority of the lepers recognisable as such by laymen. Accompanying a physician in his tour of leprosy propaganda and treatment in the district of Bankura in Bengal, which is one of the most highly infected in the whole of India, I found dozens of cases of lepers in the villages who were in the stage of infection. Not a few of these belonged to the upper castes, and instead of undergoing treatment in isolation, they were freely mixing with the villagers and were found even sharing the hooka with other men. It is estimated that there are now about 45,000 lepers in this district, and that, in some parts about three-fourths of the villagers are affected.

A systematic survey of 150 villages of three different unions has shown that (a) more than 78 per cent of the villages are infected; (b) one in every 6 families harbours leprosy cases; 4.1 per cent of the population are lepers. Since on an average 2 out of every 5 lepers are infectious and one in every 5 lepers is highly infectious, there must be approximately 18,000 infectious lepers in the district, of whom 9,000 are highly infectious. An examination of five principal castes, in each of which more than 1,000 persons were taken, showed the highest infection rate amongst the Muhammadans (7.0 per cent). The Tilis and Bauris showed 5.0 and 4.7 respectively. In South Arcot district in Madras the infection rate among school boys was found to be 3.7 while it was 5 per cent in East Godavari District among the factory hands and in the town of Puri in Orissa

among the people examined. The Social Workers' fight against leprosy, in order that it may succeed, has to be carried out both on the economic and the hygienic fronts.

Along with careful treatment and segregation, very difficult to secure among the aboriginals and semi-Hinduised lower castes, a programme of enriching the soil with adequate organic and other manures will prove helpful in combating this fell disease, now spreading like wild fire in the habitations of Bankura and Birbhum in Bengal, Puri in Orissa, Kangra in the Punjab, Guntur, the Arcots and Malabar in the South. Apart from the establishment of leper colonies and clinics where the initiative must come from the Government and the medical profession, social workers may help towards the anti-leprosy campaign by conducting survey, education and propaganda work, and by registering cases among school children for medical attention. Many lepers would require permanent segregation and their marriage should also be legally prohibited. Compulsory detention and the legal disability in respect of matrimony may be expected to combat the scourge successfully.

The Mental Deficients

The idiots, imbeciles and the feeble-minded have in all countries demanded special protection from harmful influences; and in Europe and America special schools are often provided for them by local educational authorities. Sometimes they are put into 'foster homes', and sometimes they are placed in colonies or institutions. By arranging for appropriate education and suitable employment, such as farm work for boys and domestic service for girls, and by training in good conduct, high grade morons have shown their capacity for earning a living and leading useful lives in the world. In many countries in Europe there are also homes and institutions for advising parents, through health visitors and special welfare workers, about the treatment of feeble-minded and psychopathic children of pre-school age who are kept under proper scientific observation. In India, foster homes, colonies or institutions for the mental deficients to overcome their handicaps may be said to be non-existent. It appears that there are in India only two institutions for the feeble-minded children, one maintained by a European lady at Kurseong, and the other, the Bodhana Niketan at Belghurria, near Calcutta, which comprises about 30 pupils from different parts of India. The latter has shown an amazing progress in the mental con-

dition and behaviour of boys and girls due to the adoption of modern educational techniques and the abundant motherly care and patience of an able and resourceful Bengalee lady. Success achieved in so short a period is a clear challenge to the whole of India that she can no longer dispose of the problem of mentally deficient children by simply ignoring them.

A New Attitude Towards the Mentally Disturbed

The same neglect is true in a larger and sadder measure for the mentally disturbed and deranged, for whom demonological treatment is still not unusual in India. In 1931 the number of insane persons recorded was 98,449. But there are only 19 mental hospitals in the country giving accommodation for 9,518 patients. There is, therefore overcrowding to the extent of nearly 4000 cases. In the United States the total number of patients in the hospitals for mental disease is 323,688, excluding a large number in private sanatoria. In India it appears that men belonging to the public services and professions, merchants and traders, coolies, domestic servants and beggars form a much larger proportion of the admissions than can be justified on the basis of their proportion to the total population, giving clear evidence that mental disorders in these cases represent failures in making harmonious adjustments to the new economic order. Overcrowding in the existing hospitals prevents adequate and scientific treatment, with special reference to occupational therapy and psycho-therapy, which we meet with in institutions in the West. While it is essentially a matter of the medical profession in India and of the Provincial Governments to organise public opinion and support for adequate treatment of mental disease in hospitals and colonies, social workers may play an important part in building up a programme for mental hygiene in the country. Throughout India mental disease is looked upon as an individual and family disgrace. Sympathy and understanding, which might have dealt successfully with the onset of recognisable symptoms during the incipient stages, are completely absent. The prevalent social attitudes and values also make it difficult for the hospitalised patient to regain his mental balance. A mental hygiene movement can alone build up a sound programme for mental health in the country, and call attention to the supreme importance of dealing with mental patients as dynamic human beings, of the need for sympathy, understanding and friendships in bringing about any re-education on a

mental and emotional basis. In our schools and colleges we find a large number of cases of personality disorders. Unless and until our conception of education is changed, and the emotional aspects of life which are now neglected are given adequate attention, a healthy balance in emotional life cannot be established. It will, however, take another generation to achieve such re-adjustment of our educational motives and techniques.

Sterilisation of the Feeble-Minded

In all countries there are fewer feeble-minded than mentally deranged persons in hospitals and sanatoria. In India the majority of the insane and all the definitely feeble-minded who would number about 8 millions (on the basis that in the U.S.A. 2 per cent. of the population are feeble-minded) are at large, and producing abnormals and subnormals who at the lower levels are a burden to society. Children of parents either or both of whom are mentally defective are, on the average, sub-normal. It has been found that nearly one-third of such children as survive are defective, and that more than two-fifths exhibit some degree of mental abnormality. If in the United States, the State Governments cannot afford institutional care for more than one-tenth of its feeble minded and epileptics and have turned to sterilisation of the feeble-minded as the solution, how much more is this true of India where we cannot afford any institutional treatment at all to the considerable majority of the mentally deranged persons? It is necessary that measures should be passed to legalise the sterilisation of persons showing one or more of the following conditions: insanity, feeble-mindedness, epilepsy, and criminality. If all feeble-minded persons were prevented from procreating, the problems of illegitimacy and prostitution could be more easily tackled. The majority of illegitimate children in India are born of mentally deficient mothers; while the greater proportion of prostitutes are mentally inferior and many are definitely feeble-minded. There are ample justifications for selectively sterilising the entire group of hereditary defectives; for it is found that, due to both tainted heredity and maintenance of inferior homes, inferior environments among the mental defectives, a trail of crime, murder, pauperism, prostitution and illegitimacy is generally the characteristic of the history of the defective families. Poverty in India makes the efficient functioning of the race as a whole impossible. Every decade we are adding to the millions of unemployed and semi-unemployed. A consi-

derable section of these are the social inadequates and the mental defectives. Selective sterilisation of definitely defective types would not only decrease the present costs of these unfortunates to society but also diminish the economic handicaps of the social normals. In the slums of many of the Indian cities beggars, vagabonds, criminals, prostitutes and other persons of low mentality tend to cohere together, and marriages take place between persons who are all social inadequates and defectives; and it is also apparent that they tend to have more children than normal parents. Thus the prevention of reproduction in this class would reduce the number of undesirables more rapidly than it would if matings occurred entirely at random. Caste has created the outcastes and contributes to make the problems of eradication of the defective types probably easier than in the West.

Sterilisation is coming to be practised systematically in several foreign countries such as the U.S.A., Canada, Switzerland, Denmark, Finland and Germany. In the United States 12,145 legal sterilisations were performed up to 1931, California leading the list of States with a total of 7,548 operations. But the largest number of operations have been carried out in Germany under the recent sterilisation law. During the first year of its operation sterilisations were performed upon 56,244 persons adjudged to be hereditarily defective by the High Courts of Eugenics. The law of Finland (1935) may be adopted in India. It permits sterilisation of an idiot, a feeble-minded or an insane person, if it is feared that his mental deficiency will remain without support by reason of his incapacity. It may also be applied to certain criminals and to those of unnatural sex instinct. Upon application of the patient, sterilisation may be permitted in the case of deaf-mutism, epilepsy, congenital blindness, Huntington's chorea, spinal ataxia, cerebral ataxia, muscular atrophy, spastic spinal paralysis, certain congenital malformations, hemophilia (carriers), and, if heredity is evident, alcoholism and psychopathy. The Medical Board grants permission and specifies the method to be used. There are 231,730 monks, nuns and religious mendicants in India, many of whom show some kind of mental abnormality or other. The sterilisation of monks and religious mendicants will be a desirable measure contributing towards decrease of illegitimacy. It must be mentioned that the sterilisation operation has no influence on the sexual and endocrinal functions, save in respect of

procreation, nor does it otherwise adversely affect the physical and mental condition.

Social Disorganisation and Disease

In India the transition from the rural to urban economy, from handicraft production to the machine industry, has been too disintegrative, and the growth of railways, cities and towns too rapid to permit a slow and gradual adaptation of the habits and attitudes of the people. Such changes have accompanied a severe economic pressure, the disruption of the joint family and caste control, and the unsettling of status and custom, so that the individual, so to speak, has been thrown out of doors to the fury of economic forces. It is the failure of mental and social adaptation that accounts for the prevalence and increase among the urban middle classes in India of such diseases as dyspepsia, diabetes, tuberculosis, hysteria and insanity and also of suicide.

The continuous city-ward drift due to unremunerative agricultural indebtedness and multiplication of agricultural labourers, and the overcrowding in our industrial cities and towns with inadequate opportunities of employment of woman labour, have introduced new problems of moral and social deterioration unknown before. Intemperance and prostitution in all our industrial cities are alike the results of a striking excess of males over females, overcrowding in slums, casual unemployment, uncertainty and mental depression. In the villages the people are able to put up with a considerable amount of parasitic infestations; thus malaria, dysentery and hook-worm infection are not incompatible with a fair output of agricultural work, though severe hook-worm infection produces habitual criminals, petty thieves, parasites and probably innumerable beggars. But in the cities and towns the established equilibrium between the peasant's body and the parasites it comes across in the rural areas, is upset; and the labourers become peculiarly liable to various kinds of new infections which account for physical break-down and heavy mortality.

The Extent of Venereal Disease

Syphilis is, relatively speaking, a new infection first introduced into the Indian port-towns by the Portuguese. It works greater havoc in the contact-zones where the hill and forest dwellers come in contact with migrants and probably among the rural, more than among the urban dwellers in this country. In the villages venereal diseases are far more common than are usually supposed. Sir John

Megaw estimated in 1933 the incidence of syphilis as 16 per mil. and of gonorrhoea 22 per mil. in the rural areas of India. The Surgeon General of Madras recently wrote, "From all the evidence available it appears that the incidence of venereal diseases in rural parts of this province is very heavy and an attempt is being made to ascertain its actual gravity. Among the poorer classes it is probably 50% and in some places more. The treatment of the disease is not on a very satisfactory basis partly because many patients will not attend owing to ignorance and shame and partly because proper clinics are not sufficiently widespread". The enactment and proper enforcement of laws requiring medical examinations before marriage will combat the racial poisons. Such laws should be directed mainly against the occurrence of venereal diseases in either of the parties, since this often results in imperfect and socially inadequate children.

Prostitution in the Village

The periodical fairs, *mela*s and festivals throughout India become occasions when villagers from far and near indulge in herd prostitution somewhat resembling the seasonal ribaldry and license of the primitive tribes of Chota Nagpur and Chittagong hill tracts, who give up all their sex taboos and regulations during the spring festival. In one fair in Bihar at Sonepur a census has shown the presence of as many as 276 prostitutes within the *mela* area; and the situation by day and night is as revolting as it is dangerous to the hygiene of the countryside. In most large *mela*s and fairs in India conditions are similar. But if the *mela*s are the periodical foci of infection, the mill-towns and cities, which act as magnets drawing labourers for work as well as prostitutes for their relaxation are constant sources of the spread of venereal diseases.

When labourers flock to the *bustis*, *dhauras* and tenements honey-combed with rooms, in which there is little privacy, where they cannot live with their families and where there is no segregation between the sexes, prostitution becomes common. Most of the industrial workers of India are recruited from the lower castes. In Cawnpore, the chief industrial city in Northern India, nearly three fifths of the women workers belong to the depressed castes. Now, women from such castes do not maintain high standards of morality. The disparity between the proportions of the sexes in all industrial cities and especially in the mining areas also indirectly encourages prostitution. In

one of the mill towns of Hooghly district, Bengal, out of the 300 women immigrant workers, one in three admitted being a prostitute; among the people born in Hooghly, one third of the families worked in the mills, of whom one in every four professed to be a prostitute. As a matter of fact in many *bustis*, *dhouras* and tenements throughout India there is practically open prostitution especially on off-days and holidays.

In the new mill towns and industrial cities the prostitute is, indeed, more in evidence than her more virtuous sister, the woman worker. But in the bigger cities she is often seen in the street by night and in some quarters fairly in herds. Along with the congested slums, taverns, tea and coffee shops, she seems to be regarded as being as essential to existence of industrialism and the loneliness and coarse relaxation of an alien urban life.

The Enslavement of Women

It is noteworthy that in some of the Indian cities the number of prostitutes is far greater than in the cities in Europe and America. Calcutta, for instance, has 11,000 professional prostitutes as compared with London's 8000 and Chicago's 5,000. In the whole of India, procurers and prostitutes number 72,500. Yet many of them escape census enumeration under the respectable title of domestic servants, mid-wives or dress-makers. In large parts of Gujarat the peculiar social conditions also compel vice to take clandestine forms. Few fields of social work require more tact, courage and skill in treatment than the campaign against commercialised prostitution. Brothels throughout India are managed by women, who have agents in different districts who furnish them with "fresh goods". These girls are given separate rooms, for which they pay exorbitant rents; and, from little advances of money, food, clothing or ornaments, the manager and his procurers come slowly but surely to obtrude, as octopi with their suckered limbs, and take control of the details of their lives with hideous grip, from which there is no escape. This is especially true of the lower class of tawdry prostitutes who live in *bustis*, paying rents or yielding a net profit to their keepers. In this transaction there are all the characteristic classes: The capitalist, or the landlord, the brothel-keeper and kidnapper of girls and their financier backer, the unhappy creature who offers herself for sex hire, and is paid in advance or gets wages, and the exploitative middleman, pimp or procurer which also includes the taxi-driver, and

ghariwalla, who are as notorious in this connection as their counterparts in the western cities. It is estimated that the Indian prostitutes contribute 50 to 90 per cent. of their income to the keepers, financiers and intermediaries in this morbid and flourishing traffic. Here the social and economic tragedy is aggravated by the fact that if a girl makes a "mis-step" or her dire poverty in a city, where she is helpless amidst strangers, is once exploited by a profligate man, social values with respect to chastity makes her return to normal social status and even her mental re-adjustment exceedingly difficult, if not impossible.

Social Control of Vice

The social control of organised vice demands radical measures of Municipalities and Corporations, as well as the co-operation of social service and religious agencies. Measures in the following directions have long been overdue. First, brothels and taverns are often too near one another. Such proximity is extremely undesirable and must be avoided. Secondly, no prostitution should be permitted in or near the working man's quarters. Thirdly, the penalty of the law should be particularly severe on those who misuse minor girls for vice. The brothels of the big cities still contain a large number of girls whose life is damned before it begins. Street solicitation must be more severely dealt with. Fourthly, in several large towns brothels have been declared illegal. This measure should be followed up in the smaller mofussil towns. In Calcutta brothels have been closed in several streets, but the prostitutes have returned and reside in some of them. The law seems to be powerless to prevent their return. Segregation is a remedy which has been adopted in India, but this has often led to the transformation of brothels into unsuspected residential houses of prostitution. Fifthly, another constructive measure would be to make procuring girls liable to more severe penalties. All hotels, boarding houses and restaurants should also be required to place a conspicuous sign on the building bearing the name and address of the owner. The employment of woman labour in city stores, hotels and boarding houses, pan (betel) and bidi shops and sweatment establishments also requires scrutiny and control. Rescue homes and hostels, widow's shelters, refuges and reformatories for minor girls, conducted by Municipalities and private social missions, should also be established, giving food and shelter to girls who are about to enter prostitution because of econo-

mic necessity or who want to hide themselves from shame and persecution. But sometimes even these homes and refuges which have been established are utilised by their unscrupulous supervisors for enslavement of girls or immoral traffic.

In India the problem of the social control of prostitution is complicated by a confusion in social values and an inherently unjust, one-sided social ethics, which regards the prostitute as the public enemy, and discriminates against her with virtual immunity for the cad, who lives upon her earnings, and complete immunity for her patron who is equally guilty and unclean. The latter in turn is not only frequently infected by venereal diseases but is a carrier as well. In the first place compulsory medical inspection of all prostitutes must be adopted, and they should be offered facilities for medical treatment. Secondly, the procedure of New Jersey, U.S.A., may be adopted. The state has instituted the practice of urging all physicians and clinical social workers to obtain the source of infection from all patients appearing for treatment. Unless the person named is "above reproach", the man or woman in question is required to submit to a physical examination either by his or her physician or at a public clinic. A Woman's Court like that of Chicago should be established on the pattern of the Juvenile Court in the important cities of India for more effective legal handling of the vice cases, and with both the legal (i.e. the suppressive) and the rehabilitation (i.e. the constructive and preventive) programmes combined. Any attempt to control venereal disease merely by requiring examination of prostitutes is demonstrably a futile procedure. Propaganda and sex education not merely in the cities but also in the rural areas are necessary to emphasise the danger of uncleanness, and will unquestionably have some effect on reducing vice. Clinics should be established in big and small towns and also in the important melas and fairs for rendering free treatment to persons suffering from venereal diseases and also for propaganda to combat the spread of the diseases. Stringent laws are necessary, not only for prohibiting any who are not qualified physicians from taking up venereal cases, but also the advertisement of patent remedies which delude so many in India. Industrialisation, the growth of slums, the increase of the male and especially floating population, the employment of female labour in the mills and workshops in a bad social environment, poverty and drink,—all demand the widespread activities of the social hygiene movements in all our cities

and towns to cope with the new challenge to traditional sex ethics. The development of a single standard of ethics, education and economic freedom of woman, widow re-marriage and change in marriage regulations will also remove many maladjustments, promoting social impurity.

Unfortunately the Indian theatre and cinema, instead of transmitting the cultural legacy or building up integrative sex attitudes and behaviours, have a pernicious, disorganising influence on established sex values. The theatre in cities like Calcutta, Bombay or Madras is resorted to by large numbers of homeless migrants who come for the day for transacting business in the cities. Many shows are popular, chiefly because of vulgar scenes and indecent dances with their provocative and sensual display of feminine flesh. In front of the theatre or on the side alleys also wait the procurers, ever ready to exploit the opportunity as the spectators come out in a mood to welcome sensual suggestions. The cinema, in spite of censorship, releases by hundreds, pictures representing passionate love scenes or delinquent sex behaviour from the west, which tend to brush aside traditional sex codes and standards. The adolescent, whose behaviour pattern is not yet firmly established, is particularly apt to have his values and attitudes concerning sex permanently warped if not completely disorganised. While this is true of picture houses in school or college neighbourhoods, those near the bazars or in the fringes of delinquent slum areas thrive chiefly on the more vulgar and lurid pictures, arousing carnal and criminal desires, and actually operate in close relationship with houses of prostitution.

Over-crowding and Vice and Crime

In all industrial countries improvement of housing conditions, abolition of slums and the opening up of parks and recreation grounds have contributed in no small measure towards the reduction not merely of vice and crime but also of other mental and social maladjustments. These measures are becoming more and more difficult in India, as overcrowding is becoming worse in the bigger cities and extending to lesser cities and towns with their congestion first in the bazar areas and then spreading all round. Everywhere, it is the bazar that brings with it the tavern and the brothel, and little by little as squalor and degradation spread, the ancient and essential community of life represented by the square with temple, tank and garden its well and its shade trees suffers denudation and deterioration. It

is appalling to think that of the total population of Bombay 74 per cent live in one-room tenements, 62.5 per cent. in Cawnpore, 60 per cent in Nagpur, and 58 per cent in Karachi, as against only 6 per cent in London, 5 in Edinburgh, 9 in Dundee, and 13 in Glasgow. The average number of persons per room is 4.01 in Bombay as compared with 2.5 in Edinburgh, and 3.25 in Glasgow. In spite of the best efforts of the Bombay Improvement Trust the problems of congestion remain exceedingly difficult of solution, while all over India industrial development is gradually increasing the problem. In the West in most industrial countries we find now a decentralisation and distribution of big industries, their splitting up into small industrial establishments, scattered in the countryside and co-ordinated by the development of light railways, tramways or motor transport. It is in this manner that the problems of family break-down, vice, crime and other social evils are sought to be avoided through a new industrial redistribution, a new regional planning and a new partnership between industry and small scale farming. These are found at their best in Belgium, Southern Germany and Czechoslovakia.

Personal Disorganisation in Relation to the Social Crisis

It requires little imagination to realise that social work will be a mere palliative in India, and that vice, pauperism, intemperance, disease and crime cannot be prevented unless the unfavourable social situation caused by an unbalance between the decline of agriculture and urban-industrial concentration, between the decay of the village and the expansion of a few overcrowded and tentacular cities like Calcutta, Bombay and Cawnpore, rearing their heads over the debris of deserted fields and broken homesteads, be counteracted. A wise social and economic planning like what is being adopted in Germany, Italy and the United States can alone prevent social inadequacy, maladjustment and suffering, and contribute towards the positive promotion of mass welfare in India.

This is the great limitation of social work or social service in India, viz. that the entire trend of social and economic forces is bringing about both social and individual disorganisation, especially in our new cities and towns where the social crisis due to the spread of an unplanned industrialism, supported by rural decay and the disintegration of family, caste and community habits, attitudes and values, has made it more and more difficult for many indi-

viduals to construct a new life-organisation out of the remnants of the old. These become the unfortunate victims of social disorganisation: the thieves, the paupers, the vagabonds, the prostitutes, who have lost their vital contact with society.

The Need of Primary Group Contacts

Working amongst a population of Chamars, slum-dwellers in the city of Calcutta, 30 years back with a programme of adult education and co-operative organisation, we realised that nothing could help such individuals to maintain their social health more than their contacts with a primary group such as the panchayat. That experience has been corroborated by many social workers in different cities of India. In many cities we find that the migrant workers live with their caste-men in separate muhallas and hamlets, importing into the slums the caste Panchayat which acts as a stable socially defining organisation. It is the panchayat which warns a girl of loose morals, brings to book a man of evil reputation, settles a dispute with an usurious money lender, and organises pious story-telling, song and music in many a moonlit night of well-earned rest. The caste-men bring also their gods into slumdom: Ramji, Hanuman, Ganesh and the rest. Thus the validity of old forms is re-established in an environment of social unsettlement and disorganisation, helping individuals to recover the old varieties or re-orient their original tenets of life-organisation to new conditions. Social workers have always found the panchayat useful in organising co-operative credit, housing, and industrial societies and arranging for adult education, entertainment and recreation in the slum areas.

Social Values and Variant Individuals

The essence of social work is to fight anti-social attitudes and behaviour through the re-establishment of a stable community organisation, which may re-define the social situation, and gradually rebuild the life-organisation for persons who have suffered loss of status. Complete loss of status or caste is a paralysing crisis for the individual, whether a pauper, a criminal, a prostitute, a person who attempts suicide or one who escapes normal contacts by developing the delusions of insanity. The way of recovery lies in each case through the re-establishment of stable social contacts with adequate social rules and definitions, which may give the heartening support for a satisfactory

re-orientation of the person's life-organisation. An ostracised girl, who has made a mis-step, flees from her village, and tries to get even with her relations by drink and vice in the anonymity of the city. A boy becomes a thief or cocaine-smuggler, because his mother has disgraced herself, or his brothers do not treat him well at home. A political offender who has betrayed his companions commits suicide. A woman whose eccentricities are ridiculed by her set seeks refuge from reality in hallucinations. In each case the sympathy and encouragement of the group can restore the sense of social values and bring back the rebel.

Local Community Life and the Social Settlement House

By re-organising Panchayats or re-creating them where they do not exist in our cities so that these may revive essential group attitudes and standards in the new environment, much of social deterioration and individual disorganisation may be prevented in the new urban environment. Football and kabadi clubs for children, schools, libraries and dramatics, in which children and adolescents may form their own sets, have been helpful in various cities of India in developing the local community life, and preventing many urban dwellers from being driven to drink, gambling and immorality by offering attractive and wholesome substitutes. I have recently seen in Liverpool, Birmingham, Chicago and other Western cities several social settlement houses, neighbourhood clubs and community centres. The part that the University students have been playing in organising forms of recreation and developing club life in the urban districts may be usefully emulated in India, where some of the Universities, though situated in the midst of big urban populations, have shown a callous indifference to their needs and problems. The opening up of playgrounds in congested areas by Municipalities and Corporations, the organisation of sports clubs, competitive games and athletics under trained and tactful supervisors, and the club work by University settlement houses in suitable localities, where understanding social workers may endeavour to grapple with the various social pathological problems, will be of great value in counter-acting the forces of social and individual disorganisation.

The Social Control of Intemperance

Where homes are dark, dingy and unwholesome, and taverns and brothels are many and situated quite near the

working men's quarters, it is no wonder that working men and to some extent women without the disciplinary influences of caste and Panchayat have frequent recourse to drink and vice for relaxation. It may be estimated that in the mills, mines, plantations and dockyards as much as 25 to 50 per cent of the wages are spent on liquor. In the coal mines of Bihar and the gold mines of Mysore, for instance, the miners fritter away an excessive proportion of their wages on drink on pay days and holidays, and often stay at home the next day to recover from the effects of overnight indulgence and merriment. In Bihar the introduction of the out-still and the auction system by the Government in 1932 led to a considerable increase in drunkenness and consequent diminution of output, increase of accidents, vice and malnutrition. Cases of assaults and rowdiness coincide with pay days and holidays in all industrial and mining areas of India. Taverns and brothels are crowded with large numbers of idle people on these days who would be kept busy in work on week days. In the industrial cities and mill towns of India a new class of criminals is also emerging, habituated to opium, hemp, morphine or cocaine. These drugs are difficult to procure, so the victims resort to fraud and theft and, if women, to prostitution. Social workers must welcome the prohibition policy of the Congress Government which will contribute not only to an improvement of efficiency, nutrition and standard of living of the working classes, but will also diminish crime and vice. But the people should also be educated as to the benefits of the restriction of the use of liquor and a strong public sentiment for law enforcement rather than nullification should be built up. If prohibition cannot be adopted immediately for the industrial and mining areas, the Provincial Governments should at least close toddy and liquor shops on pay days and holidays following the recent regulation of the Bombay Government. Nowhere is this regulation more urgently needed than in the mines and plantations where the workers are recruited from lower castes and tribes, and intemperance is the greatest menace to the standards of living, increasing with the increase of wages. Social workers with their programmes of tea, coffee and milk substitutes have notoriously failed here, and drink, open prostitution and rowdiness all alike demand some drastic regulation, so that the labourers may go straight home on pay days. The difficulty of building up a local community life and the power of the Panchayat

among the workers recruited from different provinces in these distant settlements also calls for special measures.

Cause and Treatment of Juvenile Delinquency

It is from the cities that a new class of criminals is being recruited, viz. the juvenile offenders. These are usually boys who have inherited an unstable nervous organisation, who are truants belonging to overcrowded or broken homes, who are unemployed, and have taken up street trades in the city that are particularly hazardous morally, or who belong to notorious delinquency areas in the city where dirty and dismal slums, gambling dens, obscene theatres, brothels, dark and blind lanes, drains and dustbins, amongst which they are reared do not give opportunities of developing normal social habits and attitudes. The gang is also there with its leader, a goonda running a cheap tea or roti shop with a prostitute as an ostensible means of livelihood. It is ever ready to accept these young fellows; and expert instruction in picking a pocket getting skeleton keys, selling stolen goods to chora bazars and tricking the police is not long forthcoming. Thus the neophyte is certain to become a petty thief, a cocaine smuggler, a shop-lifter or a sex-offender, or to commit other increasingly serious crimes. Juvenile courts have been organised in a few cities in India; but institutional services to the offender are inadequate. There have been established only a few Reformatories in India. Even those which exist betray the atmosphere of jails though they are under the control of the education code. In every Province there is need of enacting the Borstal and the Good Conduct Prisoner's Probational Release Acts with a view to establishing Juvenile Courts and proper correctional schools. Since many of these offenders show both physical and emotional maladjustments, a formalised academic instruction, craft and trade practice and routinised activities should give place to a flexible training programme, adjusted to meet the needs of the individual boy as determined by careful scientific investigation by a physician, a psychiatrist and a sociologist, putting their heads together in the sifting of both pre-commitment and present behaviour factors, as in the U.S.A. In the U.S.A. the scientific opinion has gone against an institutional treatment of juvenile offenders and prefers placement in suitable foster homes. In India we should move in the direction of correctional homes and colonies rather than of reformatories; and an important field of social work lies in the organisation of private child-

placing agencies, which may individualise the treatment of behaviour-problem children. The reformatories that exist should accept the obligation of individual treatment, the needs of which must be met by a staff who have specialised in scientific physical and mental investigation, care and hygiene. The absence of after-care Societies is another very serious drawback in India; and this also nullifies the results achieved in the Reformatories. When juvenile offenders are unable to obtain employment and encounter fear and distrust after release, they suffer in status and easily drift back to crime. Each reformatory, therefore, should accept also a social case work responsibility for the boy and his family which should continue during his stay and after his release from the institution.

Crime and Poverty

Crime and poverty are intimately connected with each other in all parts of the world; but nowhere is this truer than in India, where the crime barometer rises and falls with the quality of the harvests. This holds good in villages and in the cities, for adult as well as juvenile crime. In seasons of bad harvests small farmers and agricultural labourers move about in considerable numbers in the futile search for employment in towns, and hard-pressed by hunger, resort to thefts and robberies. Even under the present Government there develops a sense of insecurity in many parts of India during years of drought and distress, when the number of thefts and robberies by day and by night mounts up, not to speak of petty pilfering by the amateurs.

Crime and Caste

There is, however, one class of criminals, young and old, men and women, who are to be found only in India, and whose reclamation creates a vast amount of social work for generations. These are the criminal tribes and castes in India, who not only take up some or other particular form of crime as a profession, but do so as a caste and as a religion. They work under a strict code of tribal law and recognise grades of precedence between tribes. The special occupation of each tribe varies widely from that of the pick-pocket to the cattle thief, counterfeit of coins, house-breaker, gang robber, railway thief and so on. Each tribe follows its special form of crime, and all are bound by an elaborate code of etiquette and discipline among themselves, and never attempt to encroach upon

the thieving rights of other criminal tribes. Among these tribes and castes there is one which has adopted the horrible profession of stealing children and deforming and dwarfing them for the purpose of begging. For generations in the past there had been going on a slow and gradual process of assimilation of hunting, shepherd, gipsy and vagrant tribes into the fold of Hinduism, as these tribes obtained economic opportunities to supersede their occupations of hunting, collection of honey, skins and other forest produce or shepherding of cattle, goats and pigs, by adopting basket-making and weaving, scavenging, tanning, leather working and similar trades. These enabled them by and by to establish useful economic and cultural contacts with the settled agriculturists. This upward economic movement of ethnic groups, which followed the sequence of the well-known economic stages in human history, accompanied their social acceptance within the pale of Hinduism, though they could occupy only the lowest rungs in the Hindu social ladder. Cultural assimilation was everywhere facilitated, as these tribes and castes settled in the outskirts of the village as agricultural serfs or labourers and artisans, if they lived cleanly. As they gradually gave up their group marriage or promiscuous habits and filthy work, such as scavenging, tanning or pig-keeping, and adopted many of the customs of the lower caste Hindus and invited their priests to marriages and other ceremonies, they could rise correspondingly in the social scale, though they were still regarded as exterior or depressed castes.

The Reclamation of Criminal Tribes and Castes

Such natural socio-economic advance has not always been possible and the vicissitudes of social history, conquest, expropriation and economic degradation all conspired to withhold from many primitive tribes and castes their rightful social and economic opportunities. This explains that there are about 1 million persons in India, who still adopt crime as a hereditary calling, a constant challenge to the social order. Their very number shows the heavy programme that lies ahead of the social workers for decades. Both Government and private organisations such as the Salvation Army, the Belgian Franciscan Friars, the Canadian, Arya Samaj and Hindu Depressed Classes Missions have all been able to reclaim many criminal tribes and castes in different parts of India. The Salvation Army was the first to come into this field of social work and it has 25 settlements and industrial schools with a total popula-

tion of about 9,000. The methods of reform are, first, to give economic opportunities to these people by employing them on plantation work, settling them on the land or training them in industries such as weaving, carpet-making, **munj** making, needle work etc.; secondly to restrict their movements and at the same time protect them against any interference by the police, their natural enemies and oppressors; thirdly, to engender in them a sense of social dignity by offering their children and younger folk the benefits of a many-sided education and by developing their internal socio-juridical organisation, the Panchayat for deciding all disputes and maintaining their group standards of morality. Smaller colonies for groups of families rather than big settlements, improved staff acquainted with the modern treatment of behaviour problems and enriched and flexible training programme, as determined by careful scientific investigation, will shorten the period of reclamation from decades to years, provided we have bands of social workers, far-sighted, zealous and adventurous who can live unseen and unknown in outlying and even inaccessible jungles and hills where the criminal tribes and castes are chiefly distributed.

Social Work for the Depressed Castes

A kindred, urgent and even more colossal social work that awaits is represented by the social amelioration of the so-called depressed classes of India, whose poverty, amounting sometimes to hereditary debt bondage, uncleanness and intemperance have inspired the noble social mission of Mahatma Gandhi. It is a reasonable estimate that out of 60 million exterior castes not less than 50 millions are bond-slaves, whether the Chamars of Northern India or the Padials of the South, whether the Baramasiya Chakars of Orissa or the Kamias of Bihar and Chota Nagpur, whether the Shalkaris of Berar and Bombay or the Hara Vahas of Central India. Tied to the same master's family from generation to generation and practically restricted in his movements, the agricultural labourer of the depressed caste cannot appeal to the Courts for redress and protection, and in some areas is purchased and sold, his price being the amount of his debt. Sad to relate that in Central India a Kol, Kotwar or Chamar serf, and his wife can both be bought for a paltry sum of Rs. 60 to Rs. 30. In Chota Nagpur the Kamias in spite of the Kamiauti Agreements Act (1920) are in many areas no better than were the American Negro slaves, bound hand and foot to their land.

lords. In Southern and Western India social segregation in its most unrighteous and cruel forms has aggravated the evil of economic slavery among the depressed castes. Their population has also multiplied; and thus lands, set apart for the services of village menials or shares of grain at each harvest, can no longer maintain them, while they cannot obtain local employment. Thus economic, social and political issues have mingled together to produce a real social crisis in many parts. Such a crisis demands a wide sociological outlook and broad human sympathies; and can only be solved, among other measures, by special legislation making it penal to keep bond-slaves and extinguishing all their debts, by the free assignment of newly reclaimed lands for cultivation by such exterior castes, by the provision of new village sites where they would be free from the oppression of landlords and their **begar**, by the construction of wells or excavation of tanks for their exclusive use, by the provision of burning ghats and burial grounds and sanitary requirements, by the organisation of co-operative credit and thrift societies, and, above all, by training in crafts and subsidiary occupations by which the overcrowding of agriculture may be adequately relieved. Social work among the depressed castes has been undertaken systematically by the Harijan Sevak Sangh, founded by Mahatma Gandhi, as well as by several Missions and social service agencies and by the Congress. But the work is vast and the social and religious customs which promote segregation hinder the progress of individual reformists and workers. New crafts are taught to them; new lands are set apart for colonisation, but emigration of families to distant areas has also to be encouraged; customary loose sex relations have to be condemned and new marital customs have to be imported from neighbouring upper castes; instead of unclean and putrefied food, new cheap and nutritive diets should be brought to their homes; a new dignity has to be assured for them by offering them opportunities of temple entry, inter-dining and free social intercourse with the upper castes. For accomplishing the social transformation of about one-sixth of India's total population, which represents the most operous and gigantic social work in the whole world, nothing short of an emulation of the Japanese nobility, who in the last century dramatically sacrificed all their hereditary social-economic privileges by one mighty collective resolve, can succeed. It is for Mahatma Gandhi, and following his lead for the social workers by their long-con-

tinued systematic social ameliorative effort and propaganda, to prepare the nation for a similar sacrifice.

Organised Beggary

In bad agricultural years or unfavourable seasons many of these depressed caste people migrate to cities and towns in search of employment as coolies, casual labourers, earth-diggers, brick-layers and so on. Some are, however, weak and feeble-minded, and swell the ranks of the vast population of beggars. Throughout India the total number of beggars come to a considerable figure, about 14 lakhs. On the whole beggary has ceased to be profitable in India. Owing to the depression and economic stress, the wells of private charity are drying up. The customary social attitude in India is to relieve the immediate needs of the beggars by a mere dispensation of alms. In many towns **Dharmashalas**, **Chowtries** and orphanages offer some refuge, however temporary. But a considerable crowd of beggars is to be seen flocking near the bazars, important shops and streets, plying their trade of eliciting sympathy from house-holders, shop-keepers and passers-by with a patience born of long endurance and suffering, which can be found only among the paupers of the East. Diseased, deformed and crippled men, women and children, including lepers, throng the streets and especially round about markets, cinemas and theatres, bus and tramcar stands and in parts of the day when the traffic is busiest. Many of them infect innocent passers-by with dangerous and loathsome diseases. Many are engaged in petty theft or in a nefarious traffic in beggar girls. Most belong to a guild or a shadowy elaborate organisation which has its capitalists, its housekeepers who advance food, cash or dirty clothes from day to day, its wage earners who bring home every evening the hard day's collection of alms, and a large number of intermediaries, the ramifications of whose business extend to distant towns and villages and who have a share in the gains of this organised beggary. It is an underworld about which India knows little, a world in which there are cruel exploitation, poignant tragedy and sometimes noble heroism.

Control of Pauperism

Pauperism and vagrancy are serious problems, especially in the bigger cities of India: Bombay and Calcutta having as many as 5025 and 3266 beggars and vagrants respectively. But in Lahore with her 1883 beggars the pro-

portion of paupers to the total population is the largest, the figure being 4.4 per every thousand as compared with 4.3 and 2.5 respectively in Bombay and Calcutta. In India as a whole the number of beggars and vagrants is 1,397,162. The law in India cannot control pauperism, since beggars can hardly pay fines and they spread diseases in jails. For the regulation of pauperism both repressive and rehabilitative measures are necessary. Every city should have its House of Detention, where paupers and vagrants should first be classified and medically examined. Those, who are able-bodied, should then be sent to mines, plantations or to special beggar colonies, which might offer them facilities for agricultural work. Those, who are old and decrepit, should be sent to public alms-houses and country poor-farms, which care for a great many old persons in the Western countries. The diseased should be sent to hospitals; and there should be a special hospital for incurable illnesses in every big city in India. The home for the aged and the helpless and the hospital for the incurables, which have been established in Prague and named after Masaryk, are some of the best conducted institutions in the world. Juvenile beggars should be sent to Reformatories and foster homes. It is also essential that there should be restriction on the interprovincial migration of paupers; and that within the same province different towns should bear proportionate expense of the vagrants and paupers they send to the Provincial capital when it arranges for their amelioration and relief.

Individual Treatment in Modern Social Service

Modern social work in the West comprises much more than mere alms-giving. It aims at a complete understanding and amelioration of all kinds of needs and the prevention of these by removing the recurrent causes from which they arise. Above all, it believes only in the efficiency of individual diagnosis and individual treatment, which latter is accomplished through the utilisation of individual resources wherever possible, aided by all available community resources that may be required. Such community resources comprise, besides the establishment of "homes", hospitals, colonies and institutions, the organisation of scientific information and advice, appropriate, expert, training and guidance in a suitable environment, as well as a new social milieu, group sympathy and patience, which may be indispensable in dealing with a particular case of individual defect or handicap.

Concurrence of Social and Individual Disorganisation

In India we have introduced modern methods of industrial production from the West. But our industrialism has been unplanned; and the phenomenal growth of our urban aggregations and the decay of rural-communal life, which has accompanied it, have profoundly altered the old scheme of social values and attitudes and the system of human relationships. The adjustment between different institutions, the home-spun, thickly-woven fabric of custom and tradition, the system of morality, which were all adapted to a different set of conditions, have undergone severe strains and are breaking down. The worst victims of social disorganisation are those who are born with certain physical and mental handicaps. But there are others whose physical and mental capacities might have adapted them easily to the simpler economic and social régime of the past. These also now cannot adapt themselves to the exacting requirements of the present social and economic order. Moreover, there is in India a confusion of values and attitudes in different spheres of social life, which makes both personal and institutional adjustments very difficult. Industrialisation is changing the whole pattern of relationships in the making of a living; but the caste and joint family relationships and attitudes are not in accord with the demands of industrial living. Thus, misfits, maladjustments and sufferings accompany anti-social attitudes and behaviour. The educational system in India is such that it has aggravated the social and economic maladjustment and personal disorganisation among the upper and middle classes by creating unemployment and unemployability, and by diminishing the capacities of individuals to cope with the demands of the social order. Religion, which idealises human relations, smooths social friction, protects against personal disorganisation, enlarges human sympathy and acts as a balm for misfortune and suffering, is today banished from the schools, colleges and universities; and mis-planned education, which cannot even satisfy the needs of adjusting the individual to the rapidly developing economic situation, is entrusted with the more difficult task of harmonising the patterns of economic relationship with the patterns prevailing in other phases of human life.

Institutionalisation of Social Service

If we are modernising ourselves in and through new institutions in the spheres of industry, education and politics, we need also to institutionalise the methods of social

service in order that the suffering and misfortune, which are coming in the wake of the terrible difficulties of social and personal adjustment may not make us cruel and callous. This must involve the shift of emphasis in social work, first, from individual alms-giving to institutional care; secondly from amelioration to prevention, whether of handicap and misfortune or of an unfavourable social situation; thirdly, from dependence on spontaneous charity and goodwill to scientific social care work which comprehends the entirety of personal and social factors for individual care, guidance and treatment; and fourthly, from individual financing of "homes", colonies and institutions to the group or community financing of private charities.

Of these changes the most significant are a new attitude to and a recognition of the handicapped individuals for special claims. We need special rooms in our schools to take care of those children who are of less than average capacity, who are crippled and hard of hearing; we need special schools for the blind, the deaf-mute and the mentally defective, child guidance clinics for the problem children, hospitals and psychiatric institutes for the mentally disturbed, colonies for the lepers and epileptics, the placing of delinquent children in foster homes, custodial colonies for the hardened criminals and criminal tribes and castes, agricultural and industrial colonies for many of the depressed castes, now in the depths of degradation and bondage, "homes" for orphans, for the aged, for helpless widows and for fallen women and illegitimate mothers.

The Significance of the "Home" and Cottage System in India

Many such institutions which have arisen in the West must also crop up in India in order that we may cope successfully with the consequences of personal and social disorganisation in various fields, and smoothen the adjustment of new social demands to human nature which has been selected with reference to a different set of conditions. India differs from the West in that, her family traditions are so strong, that the foster home and the cottage system will be preferable to the institution in enabling the handicapped, the mentally defective and the juvenile delinquent to meet the demands of their social environment the better. The cottage system or colony is an intermediate stage between the foster home and institution. It consists of a group of cottages with farms and workshops, each cottage with a group of 30 or less inmates being in charge of a

matron. Efficient centralised management co-exists here with as much of freedom and approximation to normal family life as possible. In many countries in the West "homes" have been found particularly effective for the backward, feeble-minded and refractory children, while the cottage system has been found most useful for orphans, the aged and for those cripples, deaf, dumb, or blind who cannot find foster homes but who are in need of the special medical care which only an institution can provide. It is also the most effective way of training the more refractory juvenile delinquents and those suffering from the milder forms of mental deficiency and insanity. It is probable that within a few years both foster homes and cottages will become much more widespread in all countries.

The Co-ordination of Social Service

Provincial Governments, Municipalities or the public must now be prepared to finance the various kinds of social services. In the contributions of **Dharmadeya** in Northern India, **Iswarbritti** in Bengal, **Mahimai** in Southern India and **Zakath** among the Muhammadan traders, we find a method of financing the organised charity and public service peculiar to India. Temples, rest houses, orphanages, schools, gardens, festivals, religious ministrations, amusements, refuges for old and decrepit cattle, and a hundred other such institutions and services have been maintained and managed from times immemorial by cesses and contributions amounting to lakhs of rupees annually, which the trading community raises voluntarily and unobtrusively. India, strangely enough, spends much more on the maintenance of gods and temples than on the relief of human suffering and misfortune, and her expenditure on cattle is inconsistent with India's maintenance of an uneconomical and superfluous cattle population, which may be estimated at 125 million heads, that with advantage to agriculture animal husbandry and human food supply, should be got rid of. New fields of social work and service must now supersede the traditional ministrations and charities, and group financing should take the place of isolated and independent efforts and services. An instance of group financing charities is represented by the Parsi and Bohra community management of public relief and charitable institutions. But there is no instance of all communities in a city pooling their resources. Many American cities have organised the obtaining of finances for social work by means of Community Drives and Chests. The Community Chest

co-ordinates and consolidates the demands of the various participating agencies, and can raise much larger sums by federated drives than is possible by the separate endeavours of a particular agency. The money raised is divided among the participating agencies in agreed amounts. Many cities have also Councils of Social Agencies which coordinate and unify social services by both private and public agencies and maintain a Social Service Exchange or a Central Index. In the Exchange the record of each case investigated or helped is kept, which is at the disposal of all service agencies which become members of the Exchange. Unnecessary duplication of work and overlapping of social service are thus avoided while co-ordination often leads to greater service efficiency.

A New Social Conscience

Much more necessary than better organisation and co-ordination of charity relief and the application of scientific methods of service is the development of a new social attitude towards the handicapped and maladjusted individuals, a new social goodwill and responsibility towards them in India. This is fundamental. Without a change in the social conscience of the people, social maladjustments will continue to claim their victims by millions. It is necessary not merely to introduce scientific skill, technique and organisation to social service, but also, and, above all, to disseminate a new charity and a new helpfulness towards the handicapped, the unfortunate and the refractory in the country. No longer the deaf and the blind nor the feeble-minded, nor those who are mentally deranged, should be treated as victims of an inexorable law of karma of individuals. For the criminal there must rise a new attitude of goodwill and helpfulness, born of a new appreciation of his physical and mental equipment and his social conditioning. For the fallen woman, the unmarried mother and her illegitimate child, the present repulsion and contempt must give place to a new pity, the outcome of a new understanding of the extenuating circumstances which have made downfall easy. For the millions of the depressed castes, neglect and contempt must yield to a sympathetic consideration of their social and economic handicaps which compel them to follow unclean trades and eat loathsome food. For persons suffering from certain obvious mental defect or disease, among which are included insanity, feeble mindedness, epilepsy and criminality, it will be only human to prohibit marriage and prevent the multiplication of

social inadequates. An integrative, sympathetic attitude towards fellow men in distress and suffering is essentially the scientific-cum-religious attitude, which India has to develop to carry into effect successfully the programme of both prevention and amelioration of social inadequates, and the sterilisation or segregation of the definitely defective and deformed types.

**SUMMARY OF THE REPORT SUBMITTED BY THE
SUB-COMMITTEE ON POPULATION**

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CHAPTER I

THE TRENDS OF POPULATION.

In India in the previous census periods drought and famine were responsible for a thinning out of both old and adolescent groups.

The heavy piling up of both the young and adolescent groups has been unparalleled in the 1931 census and this will tend to a heavy and interrupted increase of population between 1931-41.

The phenomenal increase (14.5 per cent) in the 1931 census of the proportion of the smallest age group (0-10), which has been unparalleled during the last 50 years, is also responsible for ushering into social importance the problems of education and welfare of the minors on an unprecedented scale in recent years. The changing age composition in favour of the middle-aged groups as compared with the older one which has lost by 14.9 per cent has also forced into prominence the question of industrial and professional unemployment.

The birth-rates in India and Japan are almost on a par, though in the former country its diminution has been larger. We do not know anything about the fertility rate in India.

With the birth-rate almost the same and female expectancy about two-thirds of Japan the specific fertility in India must be much larger than in the case of the latter country. The age distribution of Indian women shows much larger proportion between 15 and 25 (Table III) and this is also favourable for a higher specific fertility.

Applying the Japanese fertility rates a thousand mothers would give birth to 1,454 future mothers and the net reproduction rate for India will be 1.762—308 or 1.454, as compared with the Japan's rate of 1.495.

If we take a generation as a period of thirty years, population in India would be increasing in the proportion of 0.454 every 30 years. Thus by 1961 the population of 353 millions would increase to 513 millions, if fertility and mortality remain constant.

The movement of population in India is the result of factors which differ essentially from those in Western countries. But fertility and mortality in India respond to conditions of agriculture as well as public health in a

manner unknown in the West. In the Western countries the age composition is relatively stable and dominated by the net reproduction rate, mortality being a negligible factor. In India, on the other hand, reproduction is to all intents and purposes unchecked by human volition, and the condition of harvests leads accordingly to sharp variations of the proportion of the minor age-groups. On the other hand, drought or famine as well as epidemic diseases cause considerable fluctuations in both the minor and adult age categories. The much lower expectation of life in India also sharpens the fluctuation in the adult age-groups.

The outstanding fact in the type of Indian population is that there is a heavier piling up of the base and violent fluctuations are relatively common. Like India, Japan has also a heavier foundation than all the Western countries. Both in India and Japan there is shrinkage in the middle and old age-groups, and the shrinkage is larger in India than in Japan. In the Western countries there is a gradual slope, England, Germany and United States showing the slope best. Mature adults are proportionately very much less in India than in Japan and all Western countries. In Bengal the proportion in the old age-group is the least, considerably smaller than in Bihar and Orissa and other provinces. This is probably due to earlier maturity and senility and the endemic of malaria in Bengal. It is likely that in India the population reaches maturity earlier, especially in the hot and moist regions; and the prevalence of infant marriage also accounts for this peculiarity in age composition.

During the last four decades there is a steady decrease of the old age classes 50 and over. The minor age-group has not much increased but has shown fluctuations from decade to decade due to disease and economic conditions. Its remarkable proportionate increase since 1921 is discernible. Between 1921 and 1931 there has been a tremendous increase in small children as shown below:

In Million			
Age.	1921	1931	
0-5	3.96	5.84	
5-10	4.67	4.55	

The reduction of the old age class in ratio from 105.2 to 94.5 between 1891-1931 is an index of the decrease of survival value of the population. Though population is on the whole progressive there is a gradual thinning out of

the old. Even the upper middle-aged group (40-50) has declined in ratio from 100.4 in 1891 to 96.8 in 1931. This group everywhere shows the lowest mortality and the best leadership. The decline in proportion of this group which is already the lowest among all the countries tabulated above does not augur well for social progress in the immediate future.

- A variety of factors operates to cause marked fluctuations in both age and sex composition of the population in India: (1) the variation of birth-rates which increases with good harvests and diminishes with bad harvests; (2) the variation of mortality which increases with bad harvests and diminishes with good harvests; (3) the selective incidence of certain diseases which have unfavourable effects on reproduction or which carry off a larger proportion of females or the very young or the very old. In Bengal the conception rate shows heavy increases in March and June and decreases in October or November when Malaria breaks out after the monsoon. Influenza levies a heavier toll from among infants and younger adults, i.e., persons between 20 and 35. Children and adolescents suffer less and old people, particularly males, do not seem to be so seriously affected. Influenza also strikingly reduces the conception rate. Malaria is particularly unfavourable to younger adults, especially women. Similarly the incidence of mortality from plague is heavier among women. The diseases which affect women more than children and men also affect the conception rate. (4) Migration is spasmodic in India, the volume being governed by the intensity of agricultural distress. In a year of scarcity there is an exodus of able-bodied men to places outside the district or province, and this indirectly brings about a diminution of birth-rate in a scarcity year.

There is an intimate connection between agriculture, nutrition and fertility which is discernible not by an all-India survey, but only by agricultural and demographic investigations in particular agricultural regions or ecological areas.

CHAPTER II

NUTRITIONAL PLANNING

The following general recommendations regarding diet may be made.

- (a) The inclusion of some animal protein derived from milk and milk products, eggs, fish and meat in the diet is desirable and is strongly to be recommended in the case of growing children and of expectant and nursing mothers.
- (b) Under-milled rice is of greater nutritive value than highly milled rice in respect of vitamin B1 and other factors including protein and mineral salts. Highly-milled parboiled rice, unlike highly-milled raw rice, may contain vitamin B1 in considerable quantities. The repeated washing of rice before consumption may result in the removal of a considerable proportion of the vitamin B1 and other factors originally present. Whole wheat and millet are in various respects superior to rice, particularly highly-milled rice. A diet of rice should preferably be supplemented by whole wheat or millet.
- (c) Fish is a good supplement to diets, largely composed of rice supplying good protein and sometimes vitamin A. Small fish which are entirely consumed are a rich source of calcium and other inorganic elements.
- (d) The composition of eggs, which yield good protein, most of the vitamins, together with calcium, phosphorous and iron, makes this food a valuable supplement to the rice-eaters' diet. Eggs are strongly recommended as a daily ingredient of the diet.
- (e) Milk and milk preparations are strongly to be recommended. The consumption of at least 10 oz. of milk daily is recommended, particularly for children, adolescents, and expectant and nursing women. Milk provides very good protein, vitamins A, B1, B2, C and D, and easily assimilable calcium and phosphorous.
- (f) Pulses are rich in Vitamin B1 and contain other factors belonging to the B group of vitamins; they are also a good source of vegetable protein.
- (g) Soya bean contains a high percentage of protein and fat, and preparations of soya bean are an im-

portant dietary ingredient in certain Eastern countries.

- (h) The high nutritive value of green leafy vegetables is strongly emphasised. Green leafy vegetables are rich in carotene, the precursor of Vitamin A, vitamin C and certain other vitamins and mineral salts, notably calcium, (The problem of the 'availability' of iron in leafy vegetables requires further investigation). Since animal fats containing vitamin A are scarce in Eastern countries, leafy vegetables are of special importance as a source of carotene (pro-vitamin A). They are of higher value when fresh than when dry and stale.
- (i) Among fruits and non-leafy vegetables, the following are rich in pro-vitamin A: mangoes, papaya, tomatoes, oranges, yellow and red, sweet potatoes and carrots. In general, fruits and vegetables are good sources of vitamin C.
- (j) Attention may be drawn to the possibility of making use of red-palm oil as a source of pro-vitamin A. Crude commercial red-palm oil is as rich in vitamin A activity as an average sample of cod-liver oil. The problem of introducing red-palm oil into the diet in palatable form requires further investigation.
- (k) The classes in the community which are particularly likely to suffer if their diet is defective are infants and growing children and expectant and nursing mothers; and special attention should be given to the nutrition of these classes. Milk and eggs particularly should form part of their daily diet.
- (l) People in the Wheat Zones usually take some milk. Their diet should be particularly enriched with fruits, green leafy and also non-leafy vegetables.
- (m) People in the rice-eating zones take pulses and some vegetables but not much milk. The staple food rice should be supplemented with wheat and milk; fish and eggs should be more liberally consumed. The same applies to tapioca and millet-eating zones.
- (n) Special attention should be paid to hard-working sections of the population, particularly the working classes and peasantry, whose calories requirement should be determined and who should be given sufficient calories and sufficient protein.

CHAPTER III

PLANNED FOOD POLICY

At the beginning of the 17th century India's population stood at about 100 millions. By the middle of the 18th century, population increased to 130 millions and by the middle of the 19th century it increased to 150 millions. Since that period population increased at an even greater rate. By 1931 population stood at 353 millions and in 1941 statistical analysis indicates that it will reach over 400 millions.

This unprecedented increase of population had been chiefly due to the regime of peace, control of famines and epidemics and improvement of agricultural methods. With this increase of population there had been a steady extension of cultivation. But now the chances of expansion of cultivation have been exhausted, at least in the major provinces, hills, sand-dunes and uncultivable wastes now thwarting extension.

In Burma, Assam, the Punjab, Central Provinces and Madras, extension of cultivation is possible. India's total waste lands which are available for cultivation, but not taken up and abandoned, in the different provinces, States, and Agencies, excluding the current fallow which is necessary to maintain soil fertility in her present stage of farming, amount roughly to 162 millions of acres. Of waste lands in British India about 40 per cent are in Burma, 12 per cent in Assam and 9 per cent each in the Punjab, the Central Provinces and Madras. Of the total 162 million acres about three-fourths, or 122 millions may ultimately be sown with food grains under an unremitting population pressure. This might give about 29 million tons of food grains.

It is essential that measures of land reclamation, agricultural engineering and irrigation should be undertaken on a large scale in these provinces with the assistance of the Central Government and planned migration from the more densely populated areas should be directed for agricultural colonisation.

Burma, with her separation from India and strong development of anti-Indian feeling among her rural masses has ceased to be a suitable field for Indian colonisation and settlement, though her empty spaces cry for the hoe and

plough. The N.W.F. Province is rather infertile, its dry and desert regions checking agricultural extension. Yet the success obtained in large scale dry farming in Utah in the U.S.A. in conserving soil moisture by the systematic cultivation of alternate crops of wheat and lucerne in arid areas, with an annual rainfall not exceeding 6 inches and in de-alkinizing salt-poisoned land shows that many semi-arid zones in the North-West could bear ample cropping. On the other hand Central Provinces and to a smaller extent Assam are still waiting for the axe and the plough. All these provinces should have a Land Reclamation and Rural Settlement Department as in Italy and the U.S.A. for inviting and co-ordinating migration with a view to agricultural colonisation and progress.

Provincial autonomy has sometimes engendered strong provincial feelings which stand in the way of smooth and peaceful colonisation and settlement. Nor is a *laissez faire* policy with reference to the mass movement of people desirable. Colonisation should be directed and regularised for minimising social friction. The fixation of boundary lines or routes of settlement with a view to restrain immigrants from occupying lands near villages settled by the aboriginal tribes and indigenous castes, as adopted in Assam, would contribute towards the progress of agricultural settlement without the attendant risks of friction with the indigenous population.

No doubt the Central Government should promote in co-operation with the relatively undeveloped provinces, and with financial assistance, if necessary, large schemes of reclamation, irrigation and agricultural development and develop such a policy of land settlement as may steer clear of the danger of social and economic friction in the new areas on the one hand and misery and low standard of living and farming in the congested regions on the other. This is certainly an all-India issue. The establishment or regional re-distribution of industries in a scheme of industrial planning will also have to be looked at from the standpoint of re-distribution and adjustment of surplus labour population in over-populated regions; and the policy of inter-provincial migration will have to be barred on long-range foresight and co-operation between the Provinces in this regard. It has also to be realised that industrial development in some Provinces will for a long time to come depend largely on the quality of emigrant labour.

Overseas emigration is an important factor in relieving population pressure. The total number of Indians now

settled abroad is about 4,125,000 of which 186,000 are under the British Empire. The official estimate is 2,404,000, but this excludes Burma and many small settlements.

On account of the economic depression and restrictive measures adopted by the old immigration countries Indian emigration has received a serious set back.

Given free opportunities of migration, the Indian peasant with his traditional skill and method of rice culture may introduce new era of prosperity into the Guianas, the Lowlands of Brazil, the Central American and West Indian region, the Guinea coasts of Africa and the Zanzibar region, as his dry crops, especially oil-seeds, cotton and dry cereals (such as jowar, bajra and marua) may prove a godsend to such sparsely peopled regions as Sudan Nigeria, Mozambique, Madagascar, and North Australia. Rice is the largest user of wet lands in the world. In Central and South America there are vast areas of uncultivated or semi-cultivated land which is too wet to permit the profitable cultivation of ordinary rice and such root crops as aroids (*Alocasia*, *Collocasi*, *Amerphiphallus* and taro) or vegetables like chillies, spinach and postulaca, which have been cultivated in the tropical and subtropical regions for centuries, might be introduced. No people are better than the Indians in speedily reclaiming and colonising swamps and river-bottom lands and making profitable use of them by the culture of rice and various kinds of vegetables and tubers. The success of the Indian peasants, cultivating in knee-deep water in the delta regions of Burma and Guiana amply testifies to this.

No doubt a full solution of India's emigration problem which is of such great importance for her, due to the necessity of relieving heavy population pressure in the country, is intimately bound up with India's dominion status which would carry with it the possibility of retaliatory measures that might safeguard the interests of Indian settlers abroad. With the accrual of dominion status, one of the first economic measures would be to enter into bilateral agreements with other countries which are now empty and barren or where agriculture is now at a low ebb for the purpose of Indian agricultural settlement. Such agreements may be formulated into a migratory code laying down certain compulsory standards, so that the possibilities of friction due to racial discrimination in the policy of immigration and undesirable racial contact may be minimised.

On the basis of the weighted average number of caloric requirements measured at 2,600 and 2,800 calories,

representing the daily gross per capita food requirement which would allow 200 calories for wastage during distribution in the kitchen and at the table (or on the floor), India has now fallen short of food for 48 millions of her average men. Her deficit per average man's daily ration is 423 calories.

The deficit in the food supply will be evident from the following:

- | | |
|--|------------------------|
| 1. India's population in 1931 | 353 millions |
| 2. India's population capacity on the basis of her food supply 1931 | 291 millions |
| 3. India's food shortage in 1931 | 42 billion calories |
| 4. India's population in 1935 | 377 millions |
| 5. India's addition to food supply between 1931 and 1935 | 30.3 billion calories |
| 6. India's food supply | 280.4 billion calories |
| 7. India's food needs | 321.5 billion calories |
| 8. India's population capacity in 1935 | 329 millions |
| 9. India's food shortage | 41.1 billion calories |
| 10. The number of "average men" estimated without food assuming that others obtain their formal daily ration | 48 millions |

But India not merely shows a deficit in the quantity of food production in relation to population increase but also steady deterioration of the quality of her food grains. There has been a continuous increase of the production of the inferior food grains at the cost of rice and wheat during the last thirty years, which is a tendency ominous for the general food position.

India's agricultural policy should now be re-oriented from a new angle viz. from the standpoint of production of heavy-yielding and energy-producing crops. The aim should be to counteract the present food deficiency and unbalance and to secure more protein, which is most deficient in the dietary of the masses, from every unit of land. The features of a progressive planned food policy for India may be briefly indicated as follows:—

1. The areas now devoted to barley, bajra, jowar, and cheaper millets should be adapted to more nutritive cereals viz. rice and wheat.

2. In regions as Bengal, Orissa, and South India where the undernourishment of cultivators is due to the preponderance of starch in a rice diet, and the inadequacy of proteins, the aim should be to grow a wide variety of pulses and beans. The latter can maintain the same standard of production on a smaller area under cereals and fibre crops.

3. Wherever the cultivation of fibre crops like cotton and jute and of sugarcane as a similar cash crop have altered the system of crop rotations which formerly included the protein-bearing beans, pulses and oil seeds it would be necessary to alter the cropping with a view to prevent the deterioration of foods amongst subsistence farmers.

4. It is for the Provinces and States to find out a balanced agricultural policy through the control of prices, credit and freight rates, and even through the fixation of quotas, of acreages, of non-food crops so as to ensure the peasant-family adequate subsistence without diminishing unduly the opportunities of increase of income through commercial crops. Some commercial crops are subject to such violent price fluctuations that the normal agricultural earning of a region, where there is already a chronic shortage of food production must have to recognise the necessity of securing a steady increase of the area under food crop to keep pace with the increasing population.

5. Certain new food crops which grow under similar climatic and soil conditions should be introduced into different regions of India. Every effort should be made to introduce the soya bean, the magic crop of Chinese agriculture, which has recently expanded extraordinarily in the United States and Soviet Russia.

6. No useful crop planning is, however, possible unless the Indian peasant learns to take a practical view of animal keeping. It may be estimated that about 125 million cattle out of a total stock of 200 millions are superfluous and uneconomical. There are as many as 67 cattle per hundred acres of sown area in India as compared with China's 15 and Japan's 16 cattle, while the total number of working cattle in the country is only 60 million for about 300 million crop acres. (1 pair of bullocks for 10 acres) a number wholly inadequate for intensive farming. In China animals such as pigs, goats and poultry which can subsist on by-products of agriculture, are maintained in large numbers and supply animal proteins to the dietary. In Holland and Germany the State regulates not merely the breeding from pedigree stock but also limits the number of calves which can be maintained in a herd of cattle. India must plan deliberately the reduction of her excessive cattle population so as to develop a flourishing export trade of cattle with Africa and the Dutch East Indies, and a combination of intensive crop and fodder cultivation with dairying in her small holdings at home.

- Planned crop production in adjustment to the nutritional needs of the rural masses can only be promoted by
- setting up in each Province a special Department of Applied Botany and Ecology. Close co-operation should also be established between Nutrition Research Laboratories and Agricultural and other Departments concerned with food supply. This was one of the major recommendations
- of the Inter-governmental Conference of Far-eastern countries on Rural Hygiene. The nutrition worker should consult the agricultural expert about the practical possibilities of the changes and improvements in diet he recommends. Conversely, the agricultural expert should obtain experience regarding desirable improvements in diet which may be furthered by crop-planning, better agricultural techniques, selective breeding methods, improved manuring, composting etc. • Many prejudices of the peasantry however, have to be overcome before we can adopt
- such crop planning as may improve nutrition and such food habits as may make the best out of existing resources.

CHAPTER IV

PREVENTION OF WASTE

In India the present population situation demands not merely a planned food policy which can bring about an increase in food production, and develop mixed farming, fruit growing and rural industrialisation that may all contribute towards improvement of the peasant's income and utilisation of surplus and idle labour, but also the wisest husbandry of existing land resources.

India maintains the largest agricultural population on the basis of subsistence farming in small holdings but she hardly realises that much of the soil's fertility, which is her most valuable legacy, fundamental source of her wealth and basis of prosperity, is slipping away from her. Soil erosion is the greatest single menace facing Indian agriculture today. In many areas as human and animal population has expanded beyond the limits and resources of the village fields and groves, the axe and the plough invade and appropriate all uncultivated wastes. The destruction of forest or scrub jungle and the extraction of stumps and roots lay bare the ground and expose it to the quick work of water and wind erosion. Its devastating effects vary according to soil and topography and the intensity of population pressure.

Forest conservation and replanting, gully-plugging, terracing and levelling of fields, and strengthening of field banks by growing fodder crops are the major control measures necessary for dry, badly eroded areas in India. The problem is also bound up with the regulation of excessive and indiscriminate grazing of herds and flocks. The Forest Department should extend its activities along the line of co-operation with the cultivator, who is faced with increasing fodder shortage for his multiplying cattle. If the man-made desert between Rajputana and the United Provinces is now protruding its dry, thirsty tongues into the south-western part of the Ganges Valley, man's improvident exploitation of timber, fuel and grass in the Himalayas is a similar crime which brings about devastating recurrent floods, and jeopardises the agriculture of the plains from the Punjab to Assam.

Land Planning and water planning are interlocked with each other. Soil washed from the hill slopes fallow

lands and pastures tends to fill reservoirs, clog irrigation courses and stream-channels. Agriculture, irrigation and navigation are all affected.

Many agricultural and economic problems can be dealt with adequately only as integral parts of a unified plan for a complete river watershed as a great natural territorial unit. Thus in India we ought to have a Ganges River and an Indus River Commission, a Godavari Board and a Cauvery Board which should arbitrate between the conflicting claims of agriculture and canal irrigation in the up-river areas and navigation and lagoon irrigation in the down-river areas and adopt systematic, co-ordinated measures of afforestation, flood control and river management.

Planned soil conservation is also an urgent need in India where evidence of depletion of phosphates in the rice growing tracts of Bihar, Orissa and Madras has been discerned. The importance of an adequate supply of phosphates is two-fold in the present agricultural situation in India. For not only does any phosphate deficiency reduce the yield but it also seriously lowers the food value of the crop both in grain and straw. On the other hand, in the dry regions of Bombay, Deccan, the Central Provinces and Madras, evidence of soil exhaustion is forthcoming in the absence of regular and systematic manuring, of deep tillage or of the omission of nitrogen fixing legumes with the introduction of cotton. As forests and village groves have shrunk fuel has become scarcer; and this has led to the use of cowdung as fuel. Conversely the major difference between Indian and the Japanese agriculture, where wheat and rice yields are one-half and two times greater than in India lies in the utilisation of animal and human excrements. There is no reason apart from prejudice why the methods of utilising the night-soil adopted by the Chinese and the Japanese should not be followed in India. By some preliminary treatment such as compost as is carried out by the Chinese, the risk of infection can be minimised. In India we are not only burning dung but also exporting to foreign countries bones and oil-seeds.

Not only should natural and organic resources be conserved in every sphere so that an increased population may not be faced with both chronic food shortage and chronic ecologic disbalance; but food habits also have got to be reformed. Among the rural masses the supply of protein could be increased by the introduction of eggs, mutton, pork and bacon which is consumed by the peasantry in China. With reference to the main cereals viz. wheat and

rice, highly milled rice and white wheatened flour, the consumption of which is spreading from the upper classes to the rural population are both deficient in Vitamin B, and it will be necessary to restore the healthy habit of consuming home-pounded rice and atta and to check the spread of rice and wheat mills in the rural areas. Inappropriate food preparation also leads to a good deal of waste and loss of nutrient materials of food stuffs. The parboiling of rice and its subsequent drying in the sun deprive the food grain of such small amounts of Vitamin A as it originally contained.

Many vegetables are cooked in such manner in India that leads to the destruction of vitamin contents. Another significant instance of inappropriate food preparation is afforded by the use of boiled ghee. Vitamin A has been found fairly stable at temperatures upto 125°C ., but is rapidly destroyed at higher temperatures. Throughout India ghee is subjected to high temperatures and thus Vitamin A is completely lost. The loss of the yellow colour of ghee runs parallel with the loss of Vitamin A and it takes a longer time for the buffalo ghée to lose its yellow colour. Unbalanced food like deficient food is in no small measure responsible for the bad feeding of children and mothers in India and for high infantile and maternal mortality which is preventible. In large areas of Southern India, where milled rice is the staple article of diet, nearly all the pregnant females are in a state of avitaminosis B. As a result the incidence of premature births is three times as great as it is in the north of India (where wheat is the staple diet), and in consequence the infant mortality rate also is many times greater. The shortage of Ca and P is often as serious a factor.

CHAPTER V

SOCIAL LEGISLATION

All social customs, religious taboos and injunctions which now stand in the way of the husbandry of soil resources and efficient utilisation of available food resources have now to be abjured to mitigate the effects of chronic food shortage and poverty.

Belief in the sacredness of the cow, untouchability, taboo against the use as manure extremities other than those of cattle, taboo against several small crafts and callings, and against even the use of the plough and the divisibility of every kind of agricultural capital, share, holding, plot, house, grove, pond and even trees, prevent wise land utilisation and even lead to a squandering of land resources.

Human resources are even more appallingly wasted and dissipated. Universal marriage and the social sanction and encouragement of child marriage especially among the lower castes who also allow their widows to marry again promote excessive multiplication. Thrift has also declined due to the increase of agricultural unemployment and poverty, change in the distribution of wealth and land resources which has created a disparity of economic opportunities and the extinction of several cottage industries and handicrafts. Hypergamy, a heavy bride price and an expensive and elaborate marriage ceremony contribute towards the cumulative increase of mortgage debt which is of no account to the land. The fruits of hard labour for years are wasted for caste dinners and rejoicings, when if stored in a savings bank or a Co-operative Society, they would have provided medical treatment for ailing children and would have saved the family as the years impair the vitality. Litigation is also a great curse in the village and its cost is ruinous to agriculture and the peasant family. How much less to agricultural operations and increase of mortgage debt due to loss of cattle could have been prevented if our peasants have knowledge of proper segregation of infected cattle during cattle epidemics or had grown their proper fodder in times of scarcity! How much human mortality and economic loss could have been prevented in years of epidemics through diffusion of knowledge regard-

ing the major diseases and the value of proper treatment, of evacuation of infected places and of inoculation!

The Co-operative movement in its social aspect is doing a lot in bringing about re-adjustments in social life so long as social legislation remains a relatively new conception to the rural masses. Co-operative Societies for consolidation of holdings, better farming societies, better living societies, crop protection societies, co-operative adult schools, co-operative medical societies, cash or grain thrift societies, all have taken roots in different parts of India, and especially in the Punjab which still remains the most fertile field of experiments in 'social' co-operation. Such societies should spread much more before we can expect a change in the social attitudes of the masses. Where the social readjustment is urgently necessary we have to depend upon legislation rather than upon Co-operative Societies which though they have shown greater flexibility and variegation of purposes in India than in any other country in the world yet can lead to but very tardy and chequered advance.

Social legislation is called for urgently at least in the following directions for combating the effects of population maladjustment and poverty:

- (1) Modification of the laws of inheritance and introduction of the law of preferred heir.
- (2) The limitation of the number of calves which can be maintained in a herd of cattle, as in Germany and other countries and the introduction of compulsory castration of scrub bullocks and ringing of bad cows.
- (3) The limitation of the expenditure for marriages and family and caste ceremonies.
- (4) Prohibition.
- (5) Compulsory free education.
- (6) The abolition of untouchability and the provision of sites in the villages for the exterior castes.
- (7) The gradual raising of the marriage age to 15-20.
- (8) The abolition of polygamy.

For social amelioration the attack must simultaneously be made on several fronts. Scientific land utilisation, better farming and living, thrift, prevention of waste and extravagance of all kinds and control of the size of the family,—all must aid one another, for each without the others must fail. Legislation will be necessary for a successful offensive in one front or other in order to cut the vicious

circle which widens itself as it gains in stability and strength.

- Even the child marriage restraint law which is intended to bring down maternal and infantile mortality and to extend the opportunities of education and better living will in all probability increase the population by increasing both fertility and survival. It has therefore to be backed up by the programme of birth control for the masses in the country.

In India abortion is more widespread than it is generally realised. Such abortion is chiefly due to the unbalanced character of the Indian diet and deficiency in essential minerals and vitamins. Reckoning the live-births in India at 14 million per annum and adding 1 million for still-births, the total pregnancies would be 16½ million and total abortion 16½ lacs per annum. Abortion is also brought about artificially. Early abortion is not uncommon in India, effected by crude methods which are highly dangerous and damaging.

Birth control would prevent the undesired or undesirable pregnancy by methods which are safer and surer than those now in vogue. Where maternity would be desired or accepted, it is only adequate nutrition and medical attention that will prevent natural or spontaneous miscarriage but enable the pregnancy to continue to its full term resulting in the production of a healthy child. With the spread of contraceptive knowledge, then, abortions will be reduced and the high maternal mortality due to too early and frequent maternity as well as child mortality will largely diminish.

Not only have we not reached any adaptive fertility in the country, which therefore suffers from the effects of heavy population pressure and terrible waste of life spilling on all sides, but the disparity in the natural increase of different social strata shows a distinct trend of mispopulation.

Throughout India the backward sections are more progressive demologically than the rest of the population, but that:

- (a) They are less long-lived than the others.
- (b) The adult group is the most predominant amongst the advanced castes and communities in which the aged also bulk most largely; and finally.
- (c) The general increase of population is more in evidence among the more fertile but, less intellectual strata of society

In the present scheme of political representation the use of a biological propensity as a weapon of increase of political power is implicit. Mere numbers by religions, by castes and by communities have acquired a new role in terms of political rights and the vital and economic significance of low standard of living and poverty caused by unrestricted multiplication recedes to background. The political factor thus confuses and complicates the economic issue before the country so far as the balancing between population and means of subsistence is concerned. And indeed, as the struggle for political power of castes, communities and religions is fostered by communal franchise each caste or community, however numerous or small, rich or poor tends to subordinate economic uplift or education to numerical increase, sectional considerations thwart the population planning for the whole nation. In so far, therefore, as the present constitution has desired a scheme of representation on the basis of divisions according to caste, community and religion, it has a sinister portent of encouraging indiscriminate increase of population and thus thwart the country's economic advance. From the demographic and economic points of view, the Indian Constitution is a serious set-back. For a country of 400 millions nothing can be gained by further increase of numbers while a slackening of the rate and even a diminution will be of great economic advantage. If the economic waste due to the appalling infant mortality alone be computed in money value, it will run to more than a crore of rupees per year. Further the reduction of the population to a manageable number will increase the opportunities of education, sanitation, income and leisure for all. Family planning will not only check the present mispopulation but will also improve the quality of the population.

For the upper Hindu castes, some of which are actually decaying in certain parts of India, a eugenic programme will include inter-caste marriage, affording a basis for a better widow re-marriage and the abolition of hypergamy, dowry and bride purchase, as well as of regional, sectional and other barriers to intermarriage. There are reasons to think that certain special castes and communities among whom there is close inbreeding due to rigid endogamous division and desire to preserve wealth within a small exclusive group have shown signs of degeneration. In such cases the abolition of the barriers of marriage will lead to an improvement of vitality.

Eugenic measures should also include the prevention of propagation of those who suffer from certain obvious mental defects or diseases among which should be included insanity, feeble mindedness and epilepsy.

The practical methods by which knowledge of contraceptive methods could be diffused are—

- (1) The inclusion in all medical colleges in India of courses on contraception.
- (2) The training of women doctors and nurses all over India in this regard.
- (3) The establishment of birth control clinics where supplies should be given free, preferably in connection with maternity, welfare centres, health units and hospitals.
- (4) The encouragement of the local manufacture of the material, whether rubber, cotton or chemical, which will be used for the purpose of contraception in order to bring the cost within the reach of the masses. The devices recommended by medical experts make birth-control cheap and practicable.
- (5) Propaganda amongst the masses through Municipalities, District Boards, and Panchayats favour 2-4 years spacing of births and the limitation of the total family to 4 children in India.

CHAPTER VI

POPULATION AND UNEMPLOYMENT

The percentage of unemployment was 14.2 in 1931 having increased from 7.1 in 1901. But to read full meaning into these figures we must add the fact that a large number of those returned as employed in agriculture, about 110 million, are as a rule unemployed for over one-third of the year. Those who are engaged in village and cottage industries are also unemployed for considerable periods.

The problem of almost universal underemployment in India cannot be solved except by a wise industrial and population policy. But the hardship caused by cyclical and technological factors in organised industry can and ought to be relieved in recognised ways. From inquiries made into this subject, it is clear that our scheme of unemployment insurance will have to be on somewhat different lines than those followed in Western countries. While the primary burden of relieving unemployment among persons habitually employed in an industry must be borne by the employers and the employed themselves, in an especially acute case of prolonged depression the state will have to run to the rescue. The financial and administrative framework provided for the relief of rural unemployment caused by famines can be copied with advantage for industrial unemployment. In this case the administrative authority may be the labour officer of the area and separate financial provision proportionate to the industrial importance of the province may be made from year to year.

The fact that organised industry is taxed mostly by the central government, while liability for relief will fall on the provincial government must be taken into account. The full and early sharing of the personal income tax with the provinces, a liberal interpretation of the clauses of the constitution providing new sources of provincial taxation and federal grants proportionate to the provision made by the province concerned, are some of the methods in which this difficulty might be met. The details apart, it is only proper to state here that a scheme of relief to industrially unemployed, comparable at least to the famine relief provision is an urgent necessity, and there are no insuperable difficulties in the way of a reasonable scheme being prepared for the immediate future.

CHAPTER VII

THE CARE OF THE UNFIT

There are defective, infirm and socially inadequate persons in every country, but in India these rise to millions. According to the 1931 census the number of persons suffering from various kinds of infirmities is as below:

Insanely	.. 120,304
Deaf-muteness	.. 230,895
Blindness	.. 601,370
Leprosy	.. 147,911

These figures, however, are an under-estimate of the real position due to the widespread tendency not to disclose any kind of defects and drawbacks as are calculated to affect social status.

In India we are accustomed to think of many of these defects as incurable, regardless of the modern achievements of hospital treatment, care and education in this regard, while there are very few institutions today which have before them a specially constructed programme to provide the defectives with appropriate vocational guidance and training which will enable them to be as economically independent as possible in adult life. Among these defectives the blind persons are most numerous in India. It may be estimated that 5 lakhs of the blind persons in India would not have been blind at all if they had been treated in early years. Children's sore eyes, syphilis and small-pox are also important causes of blindness in India and in each case the fault of the parents is complete. In organising a campaign of compulsory vaccination and the precaution of nitrate of silver application, or in enlisting the support of physicians and public workers for introducing cataract operations for the old and the free testing of eyesight and provision of glasses for all children of school age in the villages, the Public Health Department must take the initiative.

Deaf-mutes number 230,895 in India as compared with 57,084 in the United States. Deaf-muteness is not an insurmountable handicap for it has been successfully overcome by teaching lip-reading or a combination of lip-reading and sign-language in special schools to which children should be introduced earlier.

It is estimated by a reliable medical authority that the total number of lepers in India is at least a million, though the Census records only 147,911. It is a staggering figure, indicating the colossal nature of the relief work to be undertaken. Throughout India even leper barbers, vegetable sellers, milkmen and domestic servants pursue their calling with impunity, not to speak of leper beggars in an infectious stage, crowding near temples and ghats, in the centres of pilgrimage and near bus and tram stands in the big cities and towns. The most frequent haunts of the leper population are the crowded alleys of holy places which attract large numbers of pilgrimage on various occasions leading to the dissemination of the disease. Apart from the establishment of leper colonies and clinics where the initiative must come from the Government and the medical profession, social workers may help towards the anti-leprosy campaign by conducting survey, education and propaganda work and by registering cases among school children for medical attention. Many lepers would require permanent segregation and their marriage should also be legally prohibited. Compulsory detention and the legal disability in respect of matrimony may be expected to combat the scourge successfully. Municipalities especially in cities like Benares, Puri, Madura, Rameshwaram etc. should have detention houses for lepers which may be supported from temple funds.

The idiots, imbeciles and the feeble-minded have in all countries demanded special protection from harmful influences; and in Europe and America special schools are often provided for them by local educational authorities. It appears that there are in India only two institutions for the feeble-minded children.

The same neglect is true in a larger and sadder measure for the mentally disturbed and deranged, for whom demagogical treatment is still not unusual in India. In India merchants and traders, coolies, domestic servants and beggars form a much larger proportion of the admissions than can be justified on the basis of their proportion to the total population, giving clear evidence that mental disorders in these cases represent failures in making harmonious adjustments to the new economic order.

In all countries there are fewer feeble-minded than mentally deranged persons in hospitals and sanatoria. In India the majority of the insane and all the definitely feeble-minded who would number about 8 millions (on the basis that in the U.S.A. 2 per cent. of the population are

feeble-minded) are at large and producing abnormals and sub-normals who at the lower levels are a burden to society. It is necessary that measures should be passed to legalise the sterilisation of persons showing one or more of the following conditions: insanity, feeble-mindedness and epilepsy. In the slums of many of the Indian cities beggars, vagabonds, criminals, prostitutes and other persons of low mentality tend to cohere together, and marriages often take place between persons who are all social inadequates and defectives; and it is also apparent that they tend to have more children than normal parents. Thus the prevention of reproduction in this class would reduce the number of undesirables more rapidly than it would if matings occurred entirely at random. Caste has created the outcastes and contributes to make the problems of eradication of the defective types probably easier than in the West.

Sterilisation is coming to be practised systematically in several foreign countries such as the U.S.A., Canada, Switzerland, Denmark, Finland and Germany.

Syphilis is, relatively speaking, a new infection first introduced into the Indian port-towns by the Portuguese, and it works greater havoc in the contact-zones where the hill and forest dwellers come in contact with migrants and probably among the rural more than among the urban-dwellers in this country. In the villages venereal diseases are far more common than are usually supposed.

The social control of organised vice demands radical measures by Municipalities and Corporations, as well as the co-operation of social service and religious agencies. Measures in the following directions have long been overdue. First, brothels and liquor shops are often too near one another. Such proximity is extremely undesirable and must be avoided. Secondly, no prostitution should be permitted in or near the working men's quarters. Thirdly, the penalty of the law should be particularly severe on those who misuse minor girls for vice. The brothels of the big cities still contain a large number of girls whose life is damned before it begins. Street solicitation must be more severely dealt with. Fourthly, in several large towns brothels have been declared illegal. The measure should be followed up in the smaller mofussil towns. In Calcutta brothels have been closed in several streets, but the prostitutes have returned to reside in some of them. The law seems to be powerless to prevent their return. Segregation is a remedy which has been adopted in India, but this

has often led to the transformation of brothels into unsuspected residential houses of prostitution. Fifthly, another constructive measure would be to make procuring girls liable to more severe penalties. Further, forcible abduction which very often leads to social excommunication and ultimate prostitution of the girl should be dealt with more severely by law than at present. All hotels, boarding houses and restaurants should also be required to place a conspicuous sign on the building bearing the name and address of the owner. Hotels, messes and boarding houses not infrequently are used for clandestine prostitution and these require supervision and control. The pernicious tradition of attaching a spiritual import to the dedication of devadasis in temples, who are liable to lead a life of vice should be done away with by legislation in the interests of both religion and morals. Rescue homes and hostels, widows' shelters, refuges and reformatories for minor girls, conducted by Municipalities and private social missions, should also be established, giving food and shelter to girls who are about to enter prostitution because of economic necessity or who want to hide themselves from shame and persecution. But sometimes even those homes and refuges which have been established are utilised by their unscrupulous supervisors for enslavement of girls for immoral traffic. In the interest of the movement for the establishment of widows' and minor girls' homes, it is necessary that such homes should be under the supervision of municipalities.

In India the problem of the social control of prostitution is complicated by a confusion in social values; and an inherently unjust, one-sided social ethics, which regards the prostitute as the public enemy and discriminates against her with virtual immunity for the cad who lives upon her earnings and complete immunity for her patron who is equally guilty and unclean. The latter in turn is not only frequently infected by venereal diseases but is a carrier as well. In the first place compulsory and periodical medical inspection of all prostitutes must be adopted, and they should be offered facilities for medical treatment. Secondly the procedure of New Jersey, U.S.A., may be adopted. That state has instituted the practice of urging all physicians and clinical social workers to obtain the source of infection from all patients appearing for treatment. Unless the person named is "above reproach", the man or woman in question is required to submit to a physical examination either by his or her physician or at a public clinic. A

Woman's Court like that of Chicago should be established on the pattern of the Juvenile Court in the important cities of India for more effective legal handling of the vice cases, and with both the legal (i.e., the suppressive) and the rehabilitation (i.e., the constructive and preventive) programmes combined. Any attempt to control venereal disease merely by requiring examination of prostitutes is demonstrably a futile procedure. Propaganda and sex education including the dissemination of knowledge of contraceptive practice, not merely in the cities but also in the rural areas are necessary to emphasise the danger of uncleanness and will unquestionably have some effect on reducing vice. Clinics should be established in big and small towns and also in the important melas, jattras and fairs for rendering free treatment to persons suffering from venereal diseases and also for propaganda to combat the spread of the diseases. Stringent laws are necessary not only for prohibiting any who are not qualified physicians from taking up venereal cases, but also the advertisement of patent remedies which delude so many in India. The registration of physicians and the control of spurious and advertised drugs systematically adopted will no doubt help towards a more effective treatment of venereal diseases and check their propagation. Industrialisation, the growth of slums, the increase of the male and especially floating population, the unemployment of female labour in the mills and workshops in a bad social environment, poverty and drink all demand the widespread activities of the social hygiene movements in all our cities and towns to cope with the new challenge to traditional sex ethics. The development of a single standard of ethics, education and economic freedom of woman, widow remarriage and change in marriage regulations will also remove many maladjustments, and social impurities. Some of these deserve the urgent consideration of legislators in the country.

PLANNED SOCIAL SERVICE

By re-organising Panchayats or re-creating them where they do not exist in our cities so that these may revive essential group attitudes and standards in the new environment, much of social deterioration and individual disorganisation may be prevented in the new urban environment. Football and Kabadi clubs for children, schools, libraries and dramatics, in which children and adolescents may form their own sets, have been helpful in various cities of India in developing the local community life, and preventing many urban dwellers from being driven to drink, gambling and immorality by offering attractive and wholesome substitutes. In Liverpool, Birmingham, Chicago, and other Western cities social settlement houses, neighbourhood clubs and community centres are playing an important role in organised uplift work. The part that the university students have been playing in organising forms of recreation and developing club life in the urban districts may be usefully emulated in India, where some of the universities, though situated in the midst of big urban populations, have shown a callous indifference to their needs and problems. The opening up of playgrounds in congested areas by Municipalities and Corporations, the organisation of sports clubs, competitive games and callisthenics under trained and tactful supervisors and the clubwork by University settlement houses in suitable localities, where understanding social workers may endeavour to grapple with the various social pathological problems, will be of great value in counteracting the forces of social and individual disorganisation.

Social workers must welcome the prohibition policy of the Congress Government which will contribute not only to an improvement of efficiency, nutrition and standard of living of the working classes, but will also diminish crime and vice. But the people should also be educated as to the benefits of the restriction of the use of liquor and a strong public sentiment for legal enforcement rather than nullification should be built up. If prohibition cannot be adopted immediately for the industrial and mining areas, the Provincial Governments should at least close toddy and liquor shops on pay days and holidays following the

recent regulation of the Bombay Government. The law should also prohibit the sale of liquor on credit. Social workers with their programmes of tea, coffee and milk substitutes have notoriously failed here, and drink, open prostitution and rowdyism all alike demand some drastic regulation, so that the labourers may go straight home on pay days. The difficulty of building up a local community life and the power of the Panchayat among the workers recruited from different provinces in these distant settlements also calls for special measures.

It is from the cities that a new class of criminals is being recruited, viz., the juvenile offenders. There have been established only a few Reformatories in India. Even those which exist betray the atmosphere of jails though they are under the control of the education code. In every Province there is need of enacting the Borstal and the Good Conduct Prisoner's Probational Release Acts with a view to establishing Juvenile Courts and proper correctional schools. Since many of these offenders show both physical and emotional maladjustments, a formalised academic instruction, craft and trade practice and routinised activities should give place to a flexible training programme, adjusted to meet the needs of the individual boy as determined by careful scientific investigation by a physician, a psychiatrist and a sociologist putting their heads together in the shifting of both pre-commitment and present behaviour factors, as in the U.S.A. The absence of After-care Societies is another very serious drawback in India and this also nullifies the results achieved in the Reformatories. When juvenile offenders are unable to obtain employment and encounter fear and distrust after release, they suffer in status and easily drift back to crime. Each reformatory, therefore, should accept also a social case work responsibility for the boy and his family which should continue during his stay and after his release from the institution.

There is, however, one class of criminals young and old, men and women, who are to be found only in India, and whose reclamation challenges a vast amount of social work for generations. These are the criminal tribes and castes in India, who not only take up some or other particular form of crime as a profession, but do so as a caste and as a religion.

There are about 1 million persons in India, who still adopt crime as an hereditary calling, a constant challenge to the social order. Their very number shows the heavy programme that lies ahead of the social workers for de-

acades. Both Government and private organisations such as the Salvation Army, the Belgian Franciscan Friars, the Canadian, Arya Samaj and Hindu Depressed Classes Missions, have all been able to reclaim many criminal tribes and castes in different parts of India. The Salvation Army was the first to come into this field of social work and it has 25 settlements and industrial schools with a total population of about 9,000. The methods of reform are, first, to give economic opportunities to these people by employing them on plantation work, settling them on the land or training them in industries such as weaving, carpet-making, munj making, needle work etc., secondly to restrict their movements and at the same time protect them against any interference by the police, their natural enemies and oppressors; thirdly to engender in them a sense of social dignity by offering their children and younger folk the benefits of a many-sided education and by developing their internal socio-juridical organisation, the Panchayat, for deciding all disputes and maintaining their group standards of morality. Smaller colonies for groups of families rather than big settlements; improved staff acquainted with the modern treatment of behaviour problems and enriched and flexible training programme, as determined by careful scientific investigation, will shorten the period of reclamation from decades to years, provided we have zealous and adventurous social workers who may live and work in inaccessible jungles and hills where the criminal tribes and castes are chiefly distributed. Government initiative and assistance are also essential.

A kindred urgent and even more colossal social work that awaits is represented by the social amelioration of the so-called depressed classes of India, whose poverty, amounting sometimes to hereditary debt bondage, uncleanness and interference have inspired the noble social mission of Mahatma Gandhi. It is a reasonable estimate that out of 60 million exterior castes not less than 50 millions are bond-slaves, whether the Chamars of Northern India or the Padias and the Puleyas of the South, whether the Baramasiya Chakars of Orissa or the Kamias of Bihar and Chota Nagpur, whether the Shalkaris of Berar and Bombay or the Hara Vahas of Central India. Economic, social and political issues have mingled together to produce a real social crisis in many parts. Such a crisis demands a wide sociological outlook and broad human sympathies and can only be solved, among other measures, by special legislation making it penal to keep bond-slaves and extinguishing

all their debts that have run for say three years, by the assignment of newly reclaimed lands at nominal or low rents, for cultivation by such exterior castes, by the provision of new village sites where they would be free from the oppression of landlords and their begar, by the construction of wells or excavation of tanks for their exclusive use, by the provision of burning ghats and burial grounds and sanitary requirements, by the organisation of co-operative credit and thrift societies, and, above all, by training in crafts and subsidiary occupations by which the overcrowding of agriculture may be adequately relieved. For accomplishing the social transformation of about one-sixth of India's total population, which represents the most onerous and gigantic social work in the whole world, nothing short of an emulation of the Japanese nobility, who in the last century dramatically sacrificed all their hereditary social-economic privileges by one mighty collective resolve, can succeed. It is for Mahatma Gandhi, and following his lead for the social workers by their long-continued systematic social ameliorative effort and propaganda, to lead the nation for a similar sacrifice.

Pauperism and vagrancy are serious problems especially in the bigger cities of India. Bombay and Calcutta have as many as 5025 and 3266 beggars and vagrants respectively, which, however, seem to be underestimates of the actual number. But in Lahore with her 1883 beggars the proportion of paupers to the total population is the largest, the figure being 4.4 per every thousand as compared with 4.3 and 2.5 respectively in Bombay and Calcutta. In India as a whole the number of beggars and vagrants is 1,397,162. The law in India cannot control pauperism, since beggars can hardly pay fines and spread diseases in jails. For the regulation of pauperism both repressive and rehabilitative measures are necessary. Every big city should have its House of Detention, where paupers and vagrants should first be classified and medically examined. Those, who are able-bodied, should then be sent to mines, plantations or to special beggar colonies, which might offer them facilities for agricultural work. Those who are old and decrepit, should be sent to public almshouses and country poor farms, which care for a great many old persons in the Western countries. The diseased should be sent to hospitals and there should be a special hospital for incurable illnesses in every big city in India.

Monks, nuns and religious mendicants number 231, 789 in the whole of India: religious institutions, deities and

personalities deflect to themselves a large share of private charity due to the strong desire to win rewards for the next world, and have acquired through gifts and endowment large sums of money and also enjoy substantial incomes. Such money is devoted chiefly to religious objects and traditional charities. But notorious cases of lavish and spendthrift management and immoral use of such funds have also come to light. It is therefore necessary that the objects of religious endowments and charities should now be clearly defined for social and ameliorative purposes, and public opinion mobilised towards this end, and the trusteeship should be strictly supervised by the Government in the interests of public welfare. This will release large sums of money for social benefit and relief and prevention of suffering, programmes which cannot be put into effect for want of funds.

If we are modernising ourselves in and through new institutions in the spheres of industry, education and politics, we need also to institutionalise the methods of social service in order that the suffering and misfortune, which are coming in the wake of the terrible difficulties of social and personal adjustment may not make us cruel and callous. This must involve the shift of emphasis in social work, first, from individual alms-giving to institutional care; secondly, from amelioration to prevention, whether of handicap and misfortune or of an unfavourable social situation; thirdly, from dependence on spontaneous charity and goodwill to scientific social work which comprehends the entirety of personal and social factors for individual care, guidance and treatment; and fourthly, from individual financing of "homes", colonies and institutions to the group or community financing of private charities. Of these changes the most significant are a new attitude to, and a recognition of the handicapped individuals for special claims. We need special rooms in our schools to take care of those children who are of less than average capacity, who are crippled and hard-of-hearing; we need special schools for the blind, the deaf-mute and the mentally defective, child guidance clinics for the problem children, agencies of vocational selection and guidance hospitals and psychiatric institutes for the mentally disturbed, colonies for the lepers and epileptics, the placing of delinquent children in foster homes, custodial colonies for the hardened criminals, and criminal tribes and castes, agricultural and industrial colonies for many of the depressed castes now in the depths of degradation and bondage, "homes" for orphans, for the aged,

for helpless widows and for fallen women and unmarried mothers.

- Much more necessary than better organisation and co-ordination of charity relief and the application of scientific methods of service is the development of a new social attitude towards the handicapped and maladjusted individuals, a new social goodwill and responsibility towards them in India.

Resolutions of the National Planning Committee on the Report submitted by the Sub-Committee on Population.

The Final Report of the Population Sub-Committee was presented by Dr. Radhakamal Mukerjee, Chairman of the Sub-Committee, on the 4th May 1940. Mr. B. C. Guha, Secretary of the Sub-Committee, was also present. Discussion continued on the 9th May. The following resolutions were passed.

1. We agree with the view that the size of the Indian population is a basic issue in national economic planning, in so far as its unrestricted increase, out of proportion to means of subsistence, affects adversely the standard of living; and tends to defeat many social and ameliorative measures.

The problem has been fundamentally caused by the lack of all-round, co-ordinated economic development. While measures for the improvement of the quality of the population and limiting excessive population pressure are necessary, the basic solution of the present disparity between population and standard of living lies in the economic progress of the country on a comprehensive and planned basis.

2. With a deficit in food supply estimated at about 12 per cent of the requirements of the population, and chronic under-nutrition and unbalanced dietary of the masses, India should utilise her waste lands, and improve her yield per acre as much as possible.

We recommend that, in relatively sparsely populated areas, land reclamation should be promoted through Rural Settlement Departments; and planned inter-Provincial migration, from over-crowded regions should be encouraged, establishing zones of agricultural colonisation in newly reclaimed areas as well as for industrial purposes. The State should own such agricultural areas to avoid the creation of new vested interests.

3. We consider that the prevalent under-nutrition and malnutrition should be tackled by systematic crop planning, stressing the production of heavy-yielding energy-producing and also protective foodstuffs. We recommend in this connection the establishment of a Central Nutrition Board with regional boards, for developing a national nutritional policy in co-ordination with the Departments of

Agriculture and Public Health. There should also be nutrition research institutes functioning under these Boards.

The present food resources should be more effectively utilised and supplemented, particularly by vegetable or animal proteins, so as to give a more adequate and balanced diet; and an attempt should be made to improve food habits and methods of food preparation of the people, so that they may obtain more nutritive values from the foods consumed.

4. In the interests of social economy, family happiness and national planning, family planning and a limitation of children are essential, and the State should adopt a policy to encourage these. It is desirable to lay stress on self-control, as well as to spread knowledge of cheap and safe methods of birth control. Birth control clinics should be established, and other necessary measures taken in this behalf and to prevent the use or advertisement of harmful methods.

5. We consider that the gradual raising of the marriage age and discouragement of polygamy are desirable in the interests of the limitation of the size of family.

6. The removal of barriers to inter-marriage is desirable for eugenic and other social reasons.

7. An eugenic programme should include the sterilisation of persons suffering from transmissible diseases of a serious nature, such as insanity or epilepsy.

8. For the blind, deaf, mute, infirm, feeble-minded, and other socially inadequate persons, we recommend that there should be more adequate and more appropriate institutional care and vocational training through hospitals, special schools, colonies and homes, in order that they may prove useful and be not an excessive burden to society.

9. When planned society comes fully into being, occasions for individual unorganised or sporadic charity will have no place. Misfortunes for which such charity is at present provided will be far rarer then, and such as occur will be guarded against by the collective obligation of the State. Even during the transition period, individual almsgiving must give place to organised relief and institutional care.

10. All social handicaps which come in the way of equality between man and man, and man and woman, must be abolished. Untouchability and all such-like disabilities must be completely ended.

11. The maintenance of vital statistics, and the carrying out of periodic geographic surveys on comprehensive lines, are necessary; and appropriate machinery should be devised for this purpose.

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